IMPACT

of science on society

PRK

Vol. V, No. 4
December 1954

Price per copy: $ .50; 2/6; 125 fr.

IN THIS ISSUE:

SCIENTIFIC AND SOCIAL ASPECTS OF MODERN MEDICINE

by HENRI PÉQUIGNOT

IMPACT *of Science on Society*
quarterly

Annual subscription:
$1.75; 9/6; 450 fr.

Any of the National Distributors listed at the end of this number will accept subscriptions; rates in currencies other than the above will be supplied on application to the National Distributor in the country concerned.

When notifying change of address please enclose last wrapper or envelope.

© UNESCO 1954
NS 54 I 17 A

UNITED NATIONS EDUCATIONAL, SCIENTIFIC
AND CULTURAL ORGANIZATION
19 Avenue Kléber, Paris-16e, France

Contents

SCIENTIFIC AND SOCIAL ASPECTS OF MODERN MEDICINE
by HENRI PÉQUIGNOT

I. INTRODUCTION 203

The traditional setting of the problem. National analogies.

II. TECHNICAL PROGRESS 207

Pathology is a young science. Efficient medicine is even younger. The complexity of diagnostic methods. The medical consultation. The technical screens. The administrative screen. Technical progress and secularization of medical assistance. Medical research. The cost of medicine. The profit value of medicine. The inevitable role of the state.

III. SOCIAL CHANGES 225

Growing desire for medicine. The right to health. Inequalities in the face of illness—and social tensions.

IV. PRESENT PROBLEMS 229

Will medicine starve the world? The unpopularity of prophylaxis. The law of diminishing returns in preventive medicine. Social re-adaptation.

V. PSYCHOLOGICAL DIFFICULTIES 234

The patient's confusion. The doctor's refuge. The problem of the paramedical professions. The inadequacy of the authorities.

VI. THE SEARCH FOR FUTURE SOLUTIONS 243

Respective roles of the state and of intermediate organizations. The nation—too narrow a framework. Doctor-administrators. Relations between the authorities and the practitioners. The status of the medical profession and its history. The technical independence of the doctor. Psychological medicine. The patient's task.

UNIVERSITY OF MICHIGAN LIBRARIES

SCIENTIFIC AND SOCIAL ASPECTS OF MODERN MEDICINE

by

HENRI PÉQUIGNOT

Dr. Péquignot, médecin des hôpitaux de Paris *and* professeur agrégé *at the Paris Faculty of Medicine, belongs to the French Public Health Administration and is at present technical adviser to the Minister of Health. He has published several books, the chief of which are* Médecine et monde moderne, *Paris, 1953, and* Eléments de politique et d'administration sanitaires, *Paris, 1954.*

I. INTRODUCTION

In including in the title of this essay the words 'scientific' and 'social', the intention has been not only to compare two fields of interest, two undoubtedly characteristic features of modern medicine, but also, and above all, to draw attention to the close link existing between them. For it seems—and this is the theme which will be developed here—that medicine only became of real social importance when it became truly scientific, and that its social importance will continue to grow in proportion to its progress as a science. But it also seems that medicine can only remain scientific—and has perhaps only been able to become scientific—because it was first social, and has thus had the double advantage of consistent attention on the part of the authorities and of understanding on the part of the public.

Yet this is only a part of the problem raised by the modern development of medicine. It is noteworthy that public opinion and society in general, which have built up this medicine and benefit from it every day, view its growth with a certain anxiety, if not irony. Progress here, in fact, creates its own difficulties, which cannot be solved without a large-scale collective effort. For medicine, by becoming both scientific and social, imposes a heavy burden upon society, and raises a number of economic problems; it has even been feared that it might become less 'human'.

The purely private colloquy between the patient and the medical practitioner to whom he turns for help has, in fact, ceased to be a close and secret dialogue, since a series of 'screens' have been placed, to an ever-increasing extent, between doctor and patient—scientific and technical screens in diagnosis and treatment, or screens created by administrative, insurance, assistance or other bodies, which to an ever-greater degree are shouldering the cost of illness—hitherto borne by the patient himself.

It is easy to say that medicine, although it has become scientific and social, must remain 'human'. It is more difficult to discover how this can be ensured. It is proposed first of all to elucidate present developments in medical knowledge and practice, and subsequently to analyse the problems which present themselves and the psychological difficulties encountered—indicating, if not solutions for these difficulties, at least the direction in which solutions might lie.

THE TRADITIONAL SETTING OF THE PROBLEM

The growth of medicine is at present a world phenomenon—the subject of frequent discussion in all countries. The scope of these discussions differs according to the sphere in which they take place, whether it be political, administrative, sociological or professional, this last term being taken to mean not only the medical profession itself, but all para-medical professions, which are becoming ever more numerous and diverse. Account should also be taken of the opinion of the patient himself, the man in the street who, as much as anyone else, is bound to ask himself questions and for whom, in the last analysis, both the practitioner and the administrator are working.

In fact, the man in the street is by no means the least perturbed. But his reactions take many forms, and cannot easily be reduced to a common denominator. He often waxes enthusiastic over a new medical miracle, and is overcome with gratitude when he or one of his benefits from an expensive piece of therapeutic acrobatics. But on occasions, especially when his condition does not demand an urgent operation, he complains of being submitted to endless examinations and of having to undergo extremely costly and disagreeable therapy; sometimes, he is even intensely annoyed when a systematic medical examination shows him to be ill, or when he is required to submit to preventive treatment which seems to restrict his private freedom unpleasantly just when he considers himself to be in good health.

Unfortunately, the reactions of the professional, political and administrative circles to the problems presented by the technical growth and progress of medicine are just as confused and equivocal as the reactions of the man in the street; and these problems are perhaps not always presented in the way best suited for reaching clear ideas and finding valid solutions.

Thus in political and administrative quarters apprehension is felt first and foremost about the present cost of medicine. The problem most debated is that of the necessary economies to be made, i.e. the search for effective ways of controlling expenditure. It is certainly essential to have a clear mental picture of the increasing burden laid upon the national income by the provision of modern medical facilities for every citizen. It is vital that the means for financing this development should be found. It may however be thought

that this is too narrow a point of view, which does not allow for considering fully the whole problem of the organization of preventive medicine and medical care in a community. The planning that is necessary may fail if it is too easily admitted that the present high expenditure is due only to abuses and not to more deep-seated causes.

In professional quarters, emphasis is placed on the changes at present being made, more or less everywhere, in the status of the medical and allied professions. This is a concrete fact; and there are few countries in which the everyday practice of these professions has not been, or is not being, modified. It is natural that professional quarters should show distrust and hostility towards changes of whose nature they know nothing, and there can be no surprise that they should strive to defend legitimate interests and entrenched positions. Probably, however, this negative attitude is not tactically the best for the purpose of meeting in the future the need of (a) securing for medical practitioners adequate means for treating their patients, with due regard for the constant progress in modern techniques, and (b) safeguarding the freedom and ideals of the medical profession.

An interesting aspect of the gulf between the preoccupations of medical circles and those of the non-medical world is that doctors who have dealt with the problem[1] have mainly stressed the importance and consequences of technical progress in medical science, while this aspect of the question is practically passed over in silence in non-medical quarters.[2] For the latter, to put medical attention at the public's disposal would seem to be simply a part of social progress, and of security in the broadest sense; and it was from the point of view of the reorganization of social services in Great Britain that the Beveridge Report proposed the creation of the National Health Service (NHS). It is striking that the only possibility not contemplated by the originators of the NHS and of the French Sécurité sociale seems to have been the very one which did in fact materialize—namely, that new medical discoveries have consistently and considerably increased the opportunities for expenditure connected with medical care for the population.

But it is not enough to compare politico-administrative and economico-financial points of view, or the standpoint of the medical practitioner with that of the patient; comparisons must also be made between national points of view, which vary from country to country.

1. See, e.g. Ffrangcon Roberts, *The Cost of Health*, Turnstile Press, London, 1952.
2. See Paul Durand, *La Politique contemporaine de sécurité sociale*, Paris, 1953; Pierre Laroque, *Réflexions sur le problème social*, Paris, 1953; James Stirling Ross, *The National Health Service in Great Britain*, Oxford University Press, 1952.

NATIONAL ANALOGIES

At present the problem is being considered, and solutions are being sought, on a purely national level. Eeach nation has discovered some form of solution which takes account of certain historical traditions, ideological considerations and political conditions. Any comparison between countries, and *a fortiori* any attempt at 'transference of solution' from one country to another, must take all these factors into account; for example, the British National Health Service has simply 'generalized' the panel system, which is traditional in Great Britain but has never taken root in France. Similarly, hospital planning was facilitated in Great Britain by the existence of the system of voluntary hospitals and by the financial crisis which had overtaken these institutions; whereas the municipal (or departmental) nature of French hospitals, and the automatic financing of their current expenditure[1] by public authorities and the Sécurité sociale, set political difficulties in the way of the adoption, in France, of a system comparable to the British one.

Such a comparison of the various national points of view is useful, for the same phenomenon may be observed in different countries. When a difficulty is encountered, administrators and technicians—who know only their own system well—seek the explanation in certain, sometimes minor, details of that system, and hope to find a solution by modifying some of its provisions. But it is a striking fact that all countries meet with the same difficulties, especially on the financial level, where they must face the growing burden imposed by the hospitalization of patients and the increase in the sums paid out to cover the cost of medicines. This similarity of problems shows that what is at issue is not a particular system, but a parallel development taking place in all countries.

Another example can be taken from the field of professional organization and status. Although the conditions of medical practice have been radically altered in Great Britain by the NHS while only very slightly affected in France by the Sécurité sociale, medical practitioners in both countries are confronted with analogous problems: the change-over from individual practice to a system based on 'group practice'; the moral and financial status of general practitioners, specialists and consultants; relations with para-medical professions; and the respective positions of practitioners dealing with preventive medicine, medical care, and actual treatment.

Even the authorities have to face similar problems, such as the relationship of doctors to health service administrators (not belonging to the medical profession) in the service hierarchy, the relative importance of the roles of national and local authorities, the administrative position of certain specialized services for prevention or treatment. For example, should industrial medicine

1. Hospitals are refunded hospital treatment expenses (calculated on the basis of actual cost price) by the public bodies responsible.

be the province of the Minister of Labour, the Minister of Industry, or the Minister of Health? Should the School Medical Service depend upon the Ministry of Health or upon the Ministry of Education? More generally, and whatever form the institutions and the professional status of medical practitioners may take, the authorities in all countries have a three-fold problem to solve: how to integrate the whole corps of medical practitioners into a coherent service; how to secure active and effective co-operation from its users; and finally, under what conditions and to what extent the health administration can intervene in purely technical aspects of the medical profession, and especially in doctor-patient relationship (free choice of medical practitioner by the client, prescription of certain treatment or remedies by the doctor, etc.).

II. TECHNICAL PROGRESS

Without underestimating the important part that the social changes of the last two centuries have played in the development of medicine—which will be considered later—it would seem that it is the progress of medical science which is the paramount factor, and that this should be the starting-point in an attempt to clarify the problem.

PATHOLOGY IS A YOUNG SCIENCE

Thus one is led to the question: when did the history of medicine commence? It is certainly the role and duty of specialized historians[1] to look for the distant origins of medical science even further back than the time of the Greek miracle and the constitution, in about the fifth century B.C., of the Hippocratic schools in Egypt and Mesopotamia; indeed, to look for them amongst the most primitive peoples. But this search should not obscure the fact that really scientific medicine is a much more recent development. Hippocrates and Galen no doubt had a clear vision of a descriptive and even experimental study of the phenomena of illness and health, and of a type of medical practice quite divorced from magic and religion. Yet medicine as a science did not make its appearance until much later; it can be said to date only from the day when, like all sciences, it identified its subject—in this case, illness—and extracted it from among a mass of crude facts, just as geometry only dates from the day when the simple measuring of a field

1. The only reliable work is that of Sigerist, *A History of Medicine*, Oxford University Press, 1951; its publication is, unfortunately, incomplete.

developed into the intellectual study of the properties of the triangle and the square.

In the field of practical science, this process of 'identifying' or 'building-up' is never complete; it will not be possible to define and distinguish clearly between the normal and the pathological until science has reached the end of its development. There should be no surprise that, in this field, the best research work[1] still has a certain philosophical flavour, and defines these two states in a normative rather than objective way. However, it is all the more important to take into consideration the often imperceptible evolution by which medicine has passed from a subjective definition of the patient to an objective definition—and, at the present time, even to an administrative definition—of the illness.

For a long time, a man who thought he was ill was considered to be so. The sick man was a person who complained of some kind of trouble or of an anomaly in his biological functioning; this definition sufficed from the earliest times until the middle of the nineteenth century. Throughout this period, medical activity consisted in the meeting between a physician and a man who came to consult him because he regarded himself as ill. The essential part of what the physician discovered was the result of his interrogation. Almost the whole of every treatise on medicine was devoted to an analysis of the patients' complaints.

The example provided by surgical pathology, traumatism, visible tumors and cutaneous lesions, the development of autopsies and morbid anatomy after Morgagni,[2] the progressive building-up of the natural sciences, the taste for objective observation in this field and the introduction of measuring methods—such were the main elements of a veritable intellectual revolution. The coming of the new method in medicine—the anatomo-clinical method—can be symbolized by the work of Laënnec;[3] it endeavoured to perfect a certain number of objective techniques of medical examination, making it possible to deduce the existence of anatomical lesions that were manifesting themselves in discomfort on the part of the patient. The auscultation of the lungs and the taking of the temperature with a thermometer were probably the first of these techniques.

The development of medicine in the nineteenth century was due to the discovery of methods of clinical and para-clinical exploration (radiology, laboratory methods), which made it possible to analyse with great precision, on the living subject, anatomical modifications and functional disorders of the principal organs.

Simultaneously a great effort was made, particularly under the influence

1. Georges Canguilhem, *Essai sur quelques problèmes concernant le normal et le pathologique*, thesis, Strasbourg, 1943.
2. His work, *De sedibus et causis morborum* (1761), which included accounts of 600 autopsies, marks the beginnings of modern pathological anatomy.
3. His *Traité de l'auscultation médiate* (1817) is the essential basis of the anatomo-clinical method.

of Pinel, Bretonneau and their pupils, to perfect a scientifically valid nosology. At that time, the example followed was the Linnaean classification of species; and the aim was to bring order into the observation of pathological facts through the description of given diseases and morbid entities, in the same way as botanists and zoologists described species of plants and animals. This movement culminated in Bretonneau's and Trousseau's doctrine of specificity. Pasteur's discoveries, by showing that microscopic beings were at the root of a large number of diseases, were to ensure the lasting victory of this theory. Those discoveries are still, today, the basis of science, although morbid entities should not be hypostasized any more than Linnaean species; naturalists continue to believe in the 'true existence' of the rose, the pine, the dog and the frog, even though they have almost all of them become evolutionists.

But let us return to the patient. The development of these objective techniques of exploration has led to the present situation. Beside the subjective definition of the patient, there is also an objective definition: a man is considered to be ill when abnormal symptoms are revealed in him by medical examination. A whole field of pathology is now the subject of what are known as systematic case-finding examinations, whereby people showing no signs of ill-health and considering themselves to be well, but in whom our exploration techniques discover anomalies, are regarded and treated as being ill. Daily experience teaches us that we are right to act in this way, and that we render a real service to these people. The majority of them are easily convinced; but there remains a gap between this objective definition and the subjective definition of the patient—the definition of the person who continues to consider that he is ill and in whom we find nothing wrong. This is probably the most difficult of the problems confronting medicine today. The fact that the future generally proves the doctor to have been right does not resolve the question altogether satisfactorily.

This difficulty becomes somewhat acute on account of the fact that a third definition of illness has made its appearance—a social and, one might almost say, administrative definition. Society requires the physician to provide information concerning the true working capacity of an individual; and the social definition of illness coincides more or less with the definition of the individual's professional or domestic 'output', actual or potential. Furthermore, by becoming curative and preventive, medicine becomes more and more expensive, and governments have been forced to take legislative and financial measures to enable citizens to secure the benefits of modern medical treatment. In this way a veritable 'patients' charter' is gradually being evolved throughout the world.

Incidentally, this phenomenon is not so recent as its modern appearance might suggest. The sick person has always been regarded as a being apart. Primitive society considered him to be both sacred and accursed, and from

this stemmed two consequences for the man in question: he was made the object of segregation, if not of malediction, while being provided more or less obligatorily with help and assistance.

There is more than a chance link between this social definition and the objective definition of illness. In fact, society, as such, has only called upon medicine since the latter has become an objective and controllable science.

EFFICIENT MEDICINE IS EVEN YOUNGER

But here a distinction should be drawn. While it is true that, in the middle of the nineteenth century, medicine—or at least pathology—became solidly established in the West as an exact science, and evolved—particularly thanks to Claude Bernard—a precise method of research which proved rich in discoveries, it cannot be said that, at the same juncture, medical therapeutics had escaped from an empiricism which more or less condemned it to impotence. True, certain remedies of mineral origin (like mercury) or vegetable origin (like digitalis) were already known. But inadequate progress in chemistry and pharmacology restricted their truly scientific employment. The first discoveries, strangely enough, had but a limited influence on therapeutics. The rise of bacteriology and the discovery of anaesthesia opened the way, albeit timidly at first, to modern surgery. The field of action of serotherapy was quickly circumscribed. On the other hand, discoveries in the field of infectious disease were to result in a considerable technical advance of preventive medicine. Simple measures employing everyday antiseptics ensured the disappearance, within a few years, of puerperal infection and ophthalmia among new-born children. An epidemic could be stopped thanks to the declaration and early isolation of the sick, and to the disinfection of contaminated premises. Pasteur generalized the empirical discovery of Jenner, and to vaccination against smallpox were added numerous other methods for the active prevention of disease.

In short, there was a time-lag between the progress of preventive medicine and that of therapeutics; and it is somewhat remarkable that compulsory prophylactic methods were introduced into legislation in Western countries at the end of the nineteenth century, while the notion of compulsory treatment was not to be introduced until 50 years later, and then only in a limited way—applying to infectious diseases, venereal diseases, and addiction to drugs.

In fact, a long process of development in medicine and chemistry—from 1850 to 1920—was necessary before therapeutics could really burst into life. In this field a few examples must be quoted in order to reveal the rate of progress achieved.

The best-known example is that of the treatment of infectious diseases.

During the first 50 years of the nineteenth century, only one medicine was known—quinine. Two centuries of discussion and research had in fact been necessary to isolate—from a popular medicament known to certain primitive peoples, the cinchona bark, a drug used somewhat haphazardly without fixed dosage and with varying results in all the different fevers—an active compound, chemically defined, whose use in prescribed doses was to establish it as a remedy for a specific disease, malaria. Until the eve of the first world war, anti-infection therapeutics added little to its stock save salicylate of sodium, diphtheria antitoxin, and emetine (against amoebiasis). From World War I onwards, progress speeded up: on the eve of hostilities, Ehrlich made known the arsenicals and their action against syphilis; after the war, bismuth made its appearance as a medicine; and some years before the second world war, sulfa drugs were introduced. World War II saw the large-scale development of Fleming's brilliant discovery, penicillin, the starting point for the yearly discovery of new antibiotics whose spectrum of activity now extends to almost all known microbial infections, virus diseases alone resisting them. The fact that the diseases which have become easily curable in the last ten years include syphilis, tuberculosis, leprosy, typhus and all the major septicemiae is a striking testimony to the progress achieved. The rate of discovery had increased from one per century to one per decade by the beginning of the twentieth century, and to one or several major discoveries per year since 1940.

Other fields—that of synthetic hormones, for instance—have exhibited a similar rate of progress. A century of research resulted in the synthesis of adrenalin in 1901. In 1922 came the second success with the isolation of insulin. In 1926 thyroxine appeared, and shortly before the last war genital hormones and desoxycorticosterone were introduced. The isolation and therapeutic use of cortisone and of A.C.T.H. were to revolutionize entire fields of pathology during recent years.

Many more examples could be cited in other spheres. To borrow a device dear to the hearts of novelists, one could say that a doctor who had gone to sleep in 1940 and woke up in 1954 would no longer recognize either prognosis or the methods of diagnosing and treating the most common complaints, and would think he was faced with constantly recurring miracles, apart from the necessity of starting afresh his medical studies.

THE COMPLEXITY OF DIAGNOSTIC METHODS

The discovery of new therapeutic methods is, in fact, no more than one of the aspects of the general complexity of medical science and practice, the prime feature of which is perhaps the complicated nature of methods of diagnosis and of posology. These factors are linked; progress in therapeutics

has been a veritable catalyst, making it possible to distinguish between different diseases which have a similar clinical picture; but this progress has only been achieved as a result of increased precision in diagnosis, and can only be exploited thanks to this same precision. To take an example, it is certain that the diagnosis of different congenital malformations of the heart was for long a sort of intellectual exploit of specialists, yielding no practical results. But this diagnosis raised an acute problem in the very first stages of heart surgery, and the progress of this surgery demanded the evolving of infinitely more complex and detailed methods; by and large, the simple sounding of the heart has given way to the introduction of catheters into the heart cavities, making it possible to measure their pressure, analyse their blood gases and inject into them radio-opaque substances, producing on X-ray photographs a satisfactory picture of these cavities. Diagnosis has thus, in this case, become a real small-scale operation requiring the presence of at least two specialists—a heart specialist and a radiologist—as well as complicated equipment (X-ray apparatus, electro-cardiograph), quite apart from the chemist responsible for analyses. Such techniques can, of course, only be applied with safety thanks to certain pharmacological discoveries, especially anticoagulants and antibiotics. All this for a simple diagnosis, which in many cases will be only the first stage of an extremely complex treatment involving a highly qualified team of physicians and surgeons, as well as a range of equipment which was not even envisaged ten years or so ago!

With such an example—many others could be cited—we come at once to the profound change which has taken place in the relations between doctor and patient. It is perhaps useful to take a parallel example of the medical consultation of a century ago in a case similar to the one just described.

THE MEDICAL CONSULTATION

A century ago, a person in easy circumstances suffering from certain functional disturbances would go to consult a doctor of his own choice. He would be received in the doctor's consulting room (equipped and furnished in much the same way as a barrister's chambers) by a man in formal dress who would listen patiently to his explanations and sound his chest. He would come out with a diagnosis that was somewhat 'approximate'—but that he would not know, and the doctor himself would not always realize it; he would be given some general advice and a few simple medicines; however, the doctor might well, when left to himself, make a very serious prognosis in the absence of any kind of efficient treatment. The patient would, of course, be unaware of this pessimism, but little by little he would come to share it, as he realized that he was getting worse, and that medical therapeutics were not providing

him, each time he visited his doctor, with new treatment or with treatment yielding better results.

Now, right from the outset, everything may be very different. A robust person, complaining of nothing, may undergo some routine examination by a doctor whom he neither knows nor has chosen; yet this may mark the beginning of a long medical journey for this person. The doctor in question will, say, have sounded his heart, examined an X-ray photograph and advised him to consult a specialist. The specialist will naturally not be imposed on the patient, but the latter and his family, who know no specialists, are in practice bound by the doctor's advice. Moreover, in many areas no choice is possible, there being only one specialist for certain complex cases. The specialist will interview the patient in the almost 'industrial' setting of a laboratory, surrounded by assistants and technical staff. He will listen awhile to the patient, out of politeness or condescension, and in any case the latter will often hesitate to waste the obviously precious time of so important a personage; he quickly realizes that what he has to say is of no interest to anyone. While listening to him, the specialist will read the doctor's letter or examine the notes, photographs or diagrams which the patient has been asked to bring with him. And the patient is in no way shocked by this procedure: very important people are often quite satisfied to think that an eminent specialist has been consulted about their case by telephone or letter, and has formed an opinion on it by going through a file.

The specialist, after a rapid examination, will give orders which are more or less incomprehensible to the patient. Admittedly, in all countries, doctors now express themselves in the 'common' tongue and no longer use Latin. But two centuries ago the Latin they spoke was comprehensible to nine-tenths of their town clients, whereas now even the most educated of their patients cannot follow their French or English. Atomic physics and non-Euclidian geometry are expressed in the 'common' tongue, but it is harder to find people who can understand two lines of it than it was in the seventeenth century to find persons who could read a theological treatise in Latin.

At all events, the orders given by the specialist will result, for the patient, in a series of diagnoses including laboratory examinations, X-ray examinations and electrical recordings—all veritable minor operations requiring time and money; from these a file is compiled that can safely be left in the hands of the patient, since even if it contained his death sentence he would be incapable of realizing it.

The specialist will consult this file and base his verdict on it. In our example, this verdict might quite well be a decision to carry out an intracardiac operation for which the patient will be totally unprepared, since the operation may well have been a part of surgical practice for only a few months. The patient will thus set out on yet another journey in the hands of a team of at least five or six people, whom he does not know and cannot

select; even supposing that he chooses his own surgeon, he thereby simultaneously and automatically chooses, without knowing them, the surgeon's assistants and anaesthetist, as well as the theatre organization within which the surgeon agrees to work.

For anyone looking at these things from outside, immense progress has of course been made: a precise and accurate diagnosis has been made, and an effective treatment of the disease has been prescribed. Psychologically, however, the patient feels this only in a confused way—in most cases just enough to agree to go through with it, but hardly more than that. His reluctance is all the greater since an inescapable law demands that the best therapeutic prescriptions be given to patients who have not yet reached the later stages of their disease. As a general rule, it can be said that the best time for the most radical treatment is before the setting in of the functional disturbances which worry the patient. This creates a somewhat paradoxical situation: patients exhausted by the struggle against disease loudly demand serious operations and get no more from the doctor than they did a century ago —kind words and simple medicine—while patients feeling perfectly healthy are faced with operations whose very terms inflame their imagination and of which they cannot be assured, in good faith, that the risks are nil.

We should, however, not forget that progress has been achieved in another respect—in all advanced countries, this patient may now be a member of any social class. We shall have occasion to revert to this point later.

THE TECHNICAL SCREENS

In fact, in the last hundred years it is as if a series of screens has come between the doctor and the patient, whereas during the previous twenty-five centuries their relationship has remained simply a dialogue on a purely private level. We have, to begin with, the screens interposed by technology. The first appears at the stage of diagnosis, with the simplest instruments—stethoscopes, thermometers and reflex hammers. This screen grows and, with radiology, becomes a whole apparatus. It takes on additional complication with the appearance of numerous technicians and of the laboratory, and finally becomes, in the case we have analysed, a veritable chain of men and machines. Such a screen very soon becomes a cultural barrier between doctor and patient. The diagnosis arrived at by the doctor is only intelligible within the framework of an exact science, and can only be understood by those who have been thoroughly trained in that science.

A new screen—or possibly the same one—appears in the field of treatment. The simplest medicine sold today represents the result of a series of scientific, industrial and commercial operations which are entirely outside the competence of the patient, and even of the doctor himself. Two centuries

ago the doctor could still make up a number of drugs, and the chemist was no more than an artisan. Today, pharmacy is a powerful industry, bringing considerable weight to bear, particularly upon doctors, many of whom have become its salaried servants. This industry has its own dynamism; it uses raw materials obtained from all over the world, as well as manufacturing methods that are often legally protected; and it necessitates the whole internal organization of large-scale chemical industry. Early in the nineteenth century, at the time of the Continental Blockade, the breaking-off of commercial, industrial or even scientific relations between different countries had no consequences in the field of medicine. The same situation during the last world war deprived many malaria-sufferers of quinine, and many diabetics of insulin—both of which drugs did not exist a few decades ago, and which had suddenly become more vital for such patients than their daily bread.

But it is not only in the field of medicines that the screen has taken on the dimensions of a vast industry with world-wide ramifications and the necessity for a healthy economic sub-structure. Hospital treatment, too, has assumed industrial proportions. It is common knowledge that, once a disease ceases to be benign and short-lived, doctors are bound to send their patients to a hospital or clinic. Psychiatry, phtisiology and surgery are no longer conceivable except in specialized establishments which require ever more complicated equipment and the services of an increasing number of staff. It is since patients *do receive* treatment that the need to send them to hospital has made itself felt. In England and Wales, between 1900 and 1950, the number of hospital beds in voluntary hospitals rose from less than 19,000 to more than 90,000;[1] in the United States, between 1909 and 1949, it increased from less than 500,000 to over 1,750,000. Yet in Great Britain the lack of hospital beds is a serious problem, and waiting-lists grow longer every day; while in the United States many plans have been worked out for increasing the number of hospital beds. The modern hospital raises, of course, considerable administrative and financial problems, and is no longer a manageable instrument, either for the doctor, who feels he loses track of his patient in it, or for the patient, who often has the feeling of being lost in a crowd.

THE ADMINISTRATIVE SCREEN

However, during the long medical journey which the patient must make, the main screen is constituted by the growing intervention of the many entities to which he belongs. For the sake of simplicity and to avoid structural details, which in any case vary from country to country and from

1. These figures are quoted from Ffrangcon Roberts, *op. cit.*

year to year, we shall speak of the state and the public authorities without being more specific; but, as will be seen, important distinctions must in fact be made between the role of the state as such (the central or federal government), that of the intermediate public authorities (provinces, counties or departments, municipalities), and that of private bodies (profit-making or non-profit-making insurance organizations such as social insurance enterprises, friendly societies, etc.).

The growing intervention of all these entities in the doctor—patient, relationship is often first presented from the standpoint of what was its most obvious aspect in the nineteenth century—the role of the community in preventive measures. The picture, here, is roughly as follows: for a long time, there was no cause for intervention of this kind, as the patient went directly to a private doctor to ask for his help. State intervention, however, became necessary when, after the bacteriological discoveries of the last century, it was realized that a certain number of collective measures were possible, and even essential, to ensure effective prevention of disease. Thus, for example, it is useless, or practically so, to disinfect a house or clear it of rats and insects during an epidemic, if the whole of the infected area does not follow suit. Even the best type of vaccination ensures no more than limited individual protection, if everyone is not vaccinated or, more precisely, if not vaccinated for the same length of time. Vaccination, in order to confer real immunity, must be a collective measure. It is only when a case of infectious disease encounters, in a community, no more than an infinitesimal percentage of receptive subjects that epidemics are prevented. Only when vaccination is carried out generally, and thus extirpates the disease, can protection be extended, in particular to those who are biologically resistant to effective and sufficiently durable immunization.

The nineteenth century was the era of two great upheavals: the industrial revolution, which is far from complete, and which daily increases its adverse effect on health,[1] and the demographic revolution which, by its dual process of considerably increasing both population and urban concentration (the latter has, in some regions, developed more quickly than the former) has multiplied human contacts and, as a result, increased the danger of infectious diseases. The virus of most infectious diseases from which human beings suffer finds its main breeding ground in man himself.[2] Moreover, as is well known, the increased speed and frequency in circulation, both of men and of goods, have been an influence in the same direction. The result has been that pathology can no longer be confined to one given geographical area, and that almost every disease can be found all over the world.[3]

1. It is sufficient to recall the progress made in chemical synthesis.
2. Among purely human diseases it is sufficient to quote tuberculosis, syphilis, malaria, leprosy, typhoid, eruptive diseases, etc.
3. Amoebiasis, e.g. has become world-wide.

The measures required by all these changes have made state intervention inevitable in its most classic form—the state as the guardian of public order, the state as a policeman.

Technical measures of prevention could, in fact, only be effective where compulsory methods were adopted—these being understood not merely in the strict legal sense, involving the operation of the law backed up by penal sanctions against its infringement, but also in the psychological sense, as implying the organization, on a collective basis, of intellectual pressure in the form of prizes, rewards, propaganda and education. In both cases, such compulsion could only be brought to bear by powerful organizations; and this responsibility was in fact assumed by the state, though subsequently certain measures were entrusted to international organizations. It was, for example, in the interest of public health that the first permanent international organizations and institutions endowed with real powers were born: quarantine organizations, the International Public Health Office and the Health Organization of the League of Nations, which has now been succeeded by the World Health Organization. Similarly, the health and security of workers, the prevention of, and campaign against, accidents at work and occupational diseases, were among the primary objectives of the International Labour Office. The International Office of Epizootics (IOE) also has been in existence almost as long as the health organizations directly concerned with human beings.

As can be seen, the traditional description of the origins of state intervention, and of the spirit which inspired it, is not far removed from what actually did take place.

TECHNICAL PROGRESS AND SECULARIZATION OF MEDICAL ASSISTANCE

These matters may, however, be presented in a slightly different light. First of all—and we shall return to this point later—it is not certain that a clear distinction can be drawn between prevention and treatment. Again, it is not certain that official intervention came later in the field of treatment than it did in the field of prevention. In fact, initial attempts at organized medical care are to be found as far back as the ancient classical era, e.g. doctors or infirmaries for the poor in certain Greek cities. But the intervention of the authorities with regard to medical care would seem to have been masked, in all countries influenced by Christianity, by a division of roles—which was the rule in France until 1789—between the Church and the state. The modern state has really only existed for a few decades; and for centuries, from the fall of the Roman Empire to the establishment of modern states after the French and American revolutions, a distribution of labour had been practised between two types of authority—the secular (which struck coins, raised

armies, dispensed justice and maintained order) and the religious (which was responsible for teaching and public assistance, the latter being normally known by the name of 'charity'. But the second of these authorities was really, in this context, a public organization performing a task of general interest, and there is more resemblance than might be thought between the functions fulfilled, for example in France, today by the Minister of Health and those discharged before the Revolution by the *Grand Aumônier de France*.[1] In pre-revolutionary France, the poor and the hospitals were a parish concern, just as they are now a municipal concern. Leaving out of account certain modern legal categories which are apt to cloud our judgment of distant times, it can even be said that methods of financing this work were very much the same then as now. The Church had a complete fiscal system and regular resources of its own, was authorized to receive gifts and bequests, enjoyed considerable relief from taxation, and was allowed to undertake certain agricultural and craft activities from which it could derive profits. It was even the channel for royal charity—the counterpart, at that time, of our modern budget subsidies.

State intervention in the building of hospitals and in the care and aid of the poor, is thus to some extent only a modern phenomenon in that it has been secularized; it was a redistribution of activities between different public bodies rather than an extension of collective tasks.

At all events, one fundamental factor must be emphasized—technical progress. If state intervention was first seen in the field of preventive medicine, it is precisely because it was here that technical progress registered its greatest and most immediately exploitable successes. In the field of medical care, the state has done no more than take over an inheritance, without there being any radical or deep-seated changes in the services themselves from the point of view of the user.

Now it so happened that this same technical progress which *enabled* the state to intervene effectively in the matter of preventive medicine, also *forced* it to act, for the good reason that the state alone could do what the situation required, namely, apply compulsion. It is technical progress, again, which causes the state to intervene in the field of medical care (the state alone is capable of dealing with the problems raised by such progress); but this time it is for economic and financial reasons and not in order to impose legal obligations. The basic reason for state intervention is now the cost of medical care, the financial burden imposed by the treatment of patients; this is a new phenomenon, directly connected with technical progress. By becoming scientific and efficient, medicine has grown very costly and has, in consequence, become a social responsibility.

1. The same development is seen in all countries. But the example of France is the most striking because secularization, instead of being slow and gradual, was effected ruthlessly at a definite date.

True, this increase in the cost of medicine is not due merely to scientific and technical causes; social factors have also played their part, as will be seen later in this study when the influence of social progress on the expansion of medicine is analysed. But the scientific factors are certainly the prime cause, and probably the more important. Before attempting to analyse them, it may be useful to turn aside for a moment and show that it is by this same mechanism that the authorities have been compelled, fairly recently, to take a hand in medical as well as in scientific research.

MEDICAL RESEARCH

Medical research was for long an individual and almost private activity. It was in treating their patients that Laënnec, Jenner and others made their first discoveries, following the natural bent of their curiosity and inspired by purely intellectual considerations. A practitioner had only to have a reputation so as to be able, by asking higher fees from fewer and wealthier clients, to secure sufficient leisure for research and to publish its results at his own expense, or to read them before learned societies. Sydenham in England and Trousseau in France were instances of great 'society doctors' whose contributions to medical science were considerable. As a matter of fact, doctors, who mostly came from the upper middle class, often had private means which enabled them to engage in scientific research, just as others engaged in literature or philosophy. Generous patrons readily assisted doctors, as others helped painters; and university chairs gave men sufficient resources and standing to permit them to carry on a certain amount of disinterested work. All this was for a long time adequate to meet the needs involved, especially as, until the middle of the nineteenth century, research was mainly confined to the anatomo-clinical field. It was sufficient to examine patients, practically without the use of equipment, and to perform an autopsy confined to the macroscopic aspect of the organs, in order to make a useful contribution to pathology. Midway through the nineteenth century a French general practitioner, Duchenne de Boulogne, armed with nothing but a pocket electrical apparatus, visited in his spare time a hospital run by a few of his friends; yet as a result, he created medical electrology, and left a deep mark on the pathology of the central nervous system and muscle.

Unfortunately, discoveries almost always depend upon the application of new techniques; and a new technique is like a vein of a mine—it soon becomes exhausted. It was very soon realized that the vein discovered by Morgagni and Laënnec was nearing exhaustion; that everything which could be discovered by the simple use of the sense organs, without equipment to assist them, had already been discovered; and that, in order to make further progress, something different and better would have to be found. A clear

glimpse of the times when this change was taking place, when laboratory research first became a matter of concern to medicine, may be had when we see in France, between 1850 and 1870, Pasteur and Claude Bernard, the two men who symbolized the rise of French medical science, giving up much of their time to intensive propaganda directed at the authorities for the establishment of fully equipped laboratories provided with adequate working funds. Pasteur, like his German competitor Robert Koch, was finally given a powerful research institute of his own. It is noteworthy that Pasteur and Claude Bernard applied direct to the state—having realized, a century ago, that research could no longer be financed through private means, university salary or private practice of the worker concerned. Certainly, in countries like France, Germany and the United States, the 'democratization' of education enabled those with talent but no money to follow a research career; and medical research has increasingly become a calling in which private practice has no part; it also undoubtedly requires ever greater equipment and investment. This is clearly shown by an example taken from our own day: Fleming could do no more than discover penicillin; for it to be adopted in current practice, the combined efforts of two of the greatest nations at war, Great Britain and the United States, were necessary; and these efforts involved placing large-scale industrial and highly developed scientific resources at the service of this discovery for a period of several years.

It may be wondered why Claude Bernard and Pasteur thought immediately of the state. An analysis of the present situation shows that medical research is financed by methods which vary from country to country, but whose effectiveness is comparable: it is sometimes carried on in state institutes, and sometimes in private institutes belonging to the pharmaceutical industry. Actually there is not so much conflict between the two systems as one might imagine. There is perhaps no more than a legal difference between the budget subsidies given to a state research institute and the tax exemptions allowed on the sums a rich industrialist pays to a private research institute. Indeed, the cost of research in private industry is incorporated in the price of the products. When, in the last analysis, these products are paid for by official organizations which are responsible for the medical care of the citizens, it can be seen that, even though the methods of financing are different, the result is much the same: the community pays for the research. In fact, only the community is in a position to do so. The advantages and disadvantages of each of the two methods of financing selected can, of course, be weighed up in each case. But it is more important to insist upon the need, present in both cases, for effectively guaranteeing the intellectual independence and legitimate rights of the research worker and upon the best methods of ensuring such independence and rights for the men in charge of research—whether they be civil servants or chairmen of the board of directors of private undertakings.

THE COST OF MEDICINE

We may now return to the problem of the increase in the cost of medicine. Certain figures should perhaps be mentioned here. In the main countries of the Western type, approximately 5 per cent of the national income[1] is devoted to health expenditure. Less than one tenth of this figure represents the cost of preventive medicine, and this 5 per cent covers no more than the current operating costs of the present systems, no account being taken of the sums required for the most urgent investment programmes, especially in the matter of building, modernization of equipment, etc. As regards the rate of development, the least inexact calculation is perhaps the British one; this contrasts the 5 million or so pounds sterling which the United Kingdom spent in 1860 to cover its health needs with the £400 million at present expended upon the National Health Service.[2]

The first factor that comes to mind is the price of the many new medicines available to patients. The fact that it is now possible to buy hormones, antibiotics and anticoagulants which did not exist a few years ago is in itself a source of new expenditure. In the early stages, when processes of preparing medicines are lengthy and imperfect, and the costs of research and of the installation of mass-production equipment have not yet been paid off, the price of products is very high. It nearly always falls rapidly, but meanwhile new medicines make their appearance, and the total sum required for the purchase of medicines for a given community continues to increase, sometimes very quickly. The table below[3] shows the rapid increase of the percentage of the hospital-day cost represented by pharmaceutical expenses, as well as the steep growth in the consumption of medicines in certain controlled

	Pharmaceutical costs		
	in the hospital-day cost in military hospitals	*in French prisons (total)*[1]	*in Marseilles prison*
	%	francs	%
1938	3.69		
1947		47,188,403	
1948	6.02	93,740,326	10
1949	6.73	103,586,087	12
1950	7.01		13

1. From 1947 to 1949 the number of prison inmates decreased by approximately 10,000.

1. René Sand, *Concours Médical*, 22 December 1951, No. 51.
2. Ffrangcon Roberts, *op. cit.*
3. See *Techniques hospitalières*, April 1952.

and graded groups like the army, and even in certain entities such as prisons, where consumption is radically restricted.

In fact, the total cost of a cure increases even more quickly. In France, in 1949, treatment for tubercular meningitis was assessed at more than 500,000 francs (£500 or $1,400), and for lenta endocarditis (Osler's disease) at approximately 250,000 francs (£250 or $700). The increase in technical staff needed to administer these medicines should be taken into account in these costs, as well as the price of the medicines themselves. Modern therapeutics, to be safely administered, demand closer supervision than did earlier therapeutics. A hospital in Cambridge[1] which had 170 beds in 1900, 190 in 1925 and 360 in 1950 required, at these respective junctures, a staff of 7, 14, and 85 doctors; 59, 73 and 286 nurses; 2, 10 and 77 medical auxiliaries; and 1, 7 and 62 administrative officials. The rate of increase in staff is thus much higher than that in beds. Of course, while it is easy to count staff, it is much harder to assess their qualifications; yet the latter, over the same period, certainly improved in standard: for instance, while in 1900 there was only one category of medical auxiliaries, there were four in 1925, and eight in 1950. Higher qualifications demand longer periods of study and the organization of new courses of instruction; they lead eventually to higher salaries.

The cost of diagnosis should also be taken into account. Recourse to laboratory methods has become much more general and, incidentally, much more expensive. Thus, in the same hospital in Cambridge, the number of X-ray examinations during the 30 years from 1920 to 1950 rose from 516 to 19,000. Similarly, the number of biological tests rose from 1,500 in 1927 to 39,260 in 1950. Blood counts alone increased from 80 to 9,612.

THE PROFIT VALUE OF MEDICINE

Simultaneously other factors exert an influence in the same direction. One effect of medical progress is that the number of patients increases daily. Some thirty years ago a whole class of patients cost nothing or practically nothing, and it was enough to let them suffer or die at home with the help of a few analgesics. Today they have to be sent to hospital and treated. This class of patient is growing faster than the progress of medicine can cope with. This progress may at times seem to pay off immediately. Such is the case, in particular, of certain anti-infectious therapeutics. A few grams of chloromycetin change typhoid fever into a disease whose mortality rate is almost nil and in which complications are exceptional. The fever lasts three days and the patient can almost resume his normal life at the end of a fort-

1. Ffrangcon Roberts, *op. cit.*

night. Formerly, the mortality rate for typhoid was from 10 to 20 per cent and the disease lasted from one to three months, and necessitated a convalescence of two to three months as well as constant care and supervision. In the same way Winslow[1] has shown that an insecticide campaign in Greece, by preventing 150,000 cases of malaria in the year that followed, amounted to putting an extra 150,000 workers at the country's disposal, with no extra mouths to feed. It is certain that, for a nation, disease represents a great loss in production. Sampling reveals that, on any given day, 4.5 per cent of the inhabitants of a highly developed country are unable to work because of illness, and that a quarter of them, i.e. 1 per cent of the population, have been lost to production for over a year.

This profit value of medicine is all the more apparent at the present time as the rise in the standard of living and the progress of medicine have made it possible, during the last 200 years, to lengthen the span of human life; and this affects, primarily, the productive period of a man's existence. In Sweden, the average length of life rose from 34 years in 1755 to 66 years in 1936; in the United States, from 48 years in 1900 to 65 years in 1948 for males, and from 51 years to 71 years for females over the same period; and in France, from 58 years in 1937 to 66 years in 1951.

Too much emphasis must not, however, be laid exclusively on this point of view. Increased expectation of life has the further result that human existence can now be extended well beyond the average productive age, and this considerable increase in the number of unproductive older people imposes an ever greater burden on the adult working population. The doctor, as his role and ethics dictate, is at the service of all human life; he is not and must not be concerned with the problem of its economic value; he helps to prolong the life of the aged who can no longer work, no less than that of the adult who is still active.

Moreover, life remains the one illness that cannot be cured. By curing a sick person, the doctor, by this very fact puts him in a position to contract other diseases later on; in other words, he creates a future potential patient. Residual diseases, such as cancer, mental diseases, rheumatism or heart trouble, demand very costly research and care, even if the treatment is not entirely effective. Medicine would only be really economically profitable, in the strict sense of the term, if one could discover a way of sparing productive adults any illness (or of curing their intercurrent diseases very rapidly) until such time as, in full health but no longer able to work, they died a sudden death. This formula is so much of a caricature that it cannot even be considered. But for this reason the cost of medicine must continually rise, for there will be a constant increase in the number of old people who, having escaped or survived diseases that are easy to prevent and easy to cure, will

1. Winslow, *The Cost of Sickness and the Price of Health*, Monograph, WHO, 1951.

suffer over long periods from chronic affections more difficult to treat. The amount of medical care which an individual requires seems, in fact, to increase in direct proportion to his age.

One last idea must be underlined here. More and more often is it the case that active drugs simply result in an abatement of disease, an incomplete recovery, or a continued but precarious hold on life. We then have patients who are maintained in a state of 'therapeutic health' or of 'therapeutic survival'. In the first contingency—that, for example, of the diabetic who is regularly kept in health by dieting and insulin—the financial loss is not too great. Such an individual can lead a perfectly normal life if he adheres to his treatment strictly, and he can be a productive member of society. In the second contingency, we likewise have individuals needing constant care, the interruption of which, even for a brief period, would be followed by an immediate worsening of their condition, if not indeed by death; these, however, are incapable of any work. They are thus a double burden—i.e. a medical burden and a social one—on a nation's budget.

Finally, note should be taken of one peculiarity of technical progress in medicine. This is that, as in all tertiary sectors of the economy, such progress is not accompanied by a noticeable fall in cost prices. Fourastié has shown that, in order to buy a pair of shoes, a labourer must work 7 hours in Chicago, 15 in Paris and 54 in Moscow. Similarly, to buy 2 lbs (1 kg) of bread, he must work 14 minutes in Chicago, 30 minutes in Paris, and 50 minutes in Moscow. But in the tertiary sector Fourastié points out that, for a stall at the opera, 8 hours must be worked in Chicago or Paris and 7 in Moscow, and that the cost of a medical consultation is the equivalent of 5 hours of work in all three towns.[1]

THE INEVITABLE ROLE OF THE STATE

This brief analysis clearly shows that technical progress has increased not merely the availability and efficiency of medical care, but also, simultaneously, the cost of this care to such an extent that it has become impossible, or will become progressively less possible, for the private individual to pay for it himself. Technical progress thus behaves towards its potential users, i.e. each one of us, as the gods behaved towards Tantalus. On the one hand, it offers us the chance of obtaining that most precious of all things—life, and even life without suffering; on the other, it places this gift on so high a pinnacle that it is beyond our financial reach. In these circumstances it is natural that citizens should bring immense pressure to bear on the authorities and ask them to pay for each individual, to assume the financial burden of the medical care that is essential to all.

1. *Productivité française*, No. 1.

Yet at the same time the practitioner, who sees his power vastly increase and finds that he is able to make exact diagnosis and apply effective therapeutics to a growing number of patients, comes to realize that he can in fact only do this if the community provides him with a considerable amount of equipment in the way of apparatus and laboratories for the purpose of his diagnoses, as well as with trained assistants to administer his therapeutics and help him; and if his patients have the financial means to procure the drugs and medical attention which they need.

Doctors and patients alike must thus, for the same reason, have resort to the authorities to demand the working-out of two systems: a social system to cover the financial risk of illness, which shall make it possible for the poorest to be cared for as safely and efficiently as the richest, and a co-ordinated system of public health, providing every man and woman with the best preventive measures against illness, and making available to them a network of hospitals whose equipment and staff are always on a level with scientific progress.

III. SOCIAL CHANGES

This technical progress has not been the only factor in the radical changes that contemporary medicine has undergone. Social changes, which have taken place contemporanously, have played a parallel role which should not be underestimated, although it should be treated apart. In reality, the distinction is more of a didactic than of an historical nature. The progress of science cannot be distinguished or separated from its social causes. The rise of medical science in the nineteenth century was only possible thanks to a fundamental change in scientific outlook, to the previous progress made in physics, chemistry and natural sciences, and above all to the creation of a new market for medicine.

GROWING DESIRE FOR MEDICINE

A French author, Philippe Ariès,[1] has been at pains to point out that at a certain period—in France, during the nineteenth century—the attitude of an ever greater sector of enlightened opinion towards life and death underwent a change. A growing measure of ease, comfort and culture, and perhaps the decline of a certain religious mentality, caused a progressive abandoning

1. *Histoire des populations françaises*, Paris, 1948.

of that fatalistic attitude towards life and death that even today can be so easily observed amongst primitive peoples; a keen desire arose to improve and prolong human life, and it is not surprising that the counterpart of this desire was a considerable increase in the curiosity of scientists about medicine. In France, another phenomenon also played an important part: the Napoleonic wars resulted in the recruitment of large numbers of doctors for the army, and these, demobilized and placed on half-pay after the Emperor's fall, then sought to live from their profession, the outcome being that the French medical profession became largely decentralized. The presence of a doctor in almost every district enabled many people to seek medical help and to appreciate its benefits. Admittedly, this type of 'medicine' was still fairly unscientific; it did, however, render real services, as Balzac's *The Country Doctor* bears literary witness. Thus, in a certain sense, it can be said that one of the mainsprings of progress in medical science was an increased demand for medicine. This demand could, of course, only find expression after more pressing needs had been satisfied: and it was only in the nineteenth century that the countries of the West were finally delivered from the fear of famine. As always, the problem of feeding had to be resolved before attention could be turned to health. The constant rise in living standards, and the gradual decrease, in every country, of the gap between the satisfaction of the primary needs of the poorer classes and that of the primary needs of the richer classes caused a considerable increase in the demand for medicine; and in countries of the Western type, this demand was, in fact, equally strong in almost every stratum of the population.

THE RIGHT TO HEALTH

Thus has gradually emerged on the part of public opinion a general attitude according to which the health needs of each citizen are incompressible, the state being under an obligation to ensure both the prevention of disease and effective medical care for all. This is a new political myth, *the right to health*, which was already present in the Constitution of the United States and has been even more formally expressed in the majority of constitutions of more recent date. It was formulated in much the same terms in all the draft French constitutions presented to Parliament for discussion in 1945, no matter what the political affiliations of their authors. In the same way, the British National Health Service was the joint work of the three main political parties in Britain.

Yet the right to health is a notion whose legal implications will always be ill-defined. It is a right that can only exist in so far as technical possibilities, in terms of the current state of medical science, enable it to be respected. There has been a right to treatment for tuberculosis only since the day when

it became possible to treat tuberculosis. At the time of writing, there can be no right to recovery from acute leukaemia, for which no definite curative treatment is known. There can be no right to own a car or a television set, until the mass production of cars and television sets is possible. To speak of the right to health in a constitution means that the state considers this right to exist from such time as it is scientifically possible to satisfy it, without waiting for the material and financial possibilities that will ensure its operation. It means, in other words, postulating the equality of all citizens, in this case, not before the law, but before health.

This formula, as we have seen, involves the state in considerable expenditure, the extent of which cannot be assessed at the outset. War against disease is like all wars: a declaration of war can be made, but the length, limits and cost of the war cannot be fixed in advance. The health budget is, by definition, beyond the control of the legislator; it depends on the course taken by mortality and morbidity, on scientific progress, and on the desire for medical attention. The cost will, in any case, be very high, and is bound to increase.

INEQUALITIES IN THE FACE OF ILLNESS—AND SOCIAL TENSIONS

Certain economic and financial circles have expressed apprehension that the public authorities should have embarked upon a venture of this kind. Yet it would have been worse had the authorities failed to do so. Once hunger is banished, it is difficult to root out from man's heart the desire to be made well; and it is easy to discern the social tensions which arise, or might arise, from the fact (and its consequences) that one sick person was able to pay for medical treatment while another was not.

This social tension is all the greater in that the press and certain modern communication media, like the radio, make medical discoveries known very swiftly and in all countries. A serious daily problem is the premature and often inaccurate nature of the information published in this way. It is a lamentable spectacle to see journalists with no critical judgment praising some quack medicine and thus raising baseless hopes. Sometimes, too, the premature announcement is made of a very important discovery which, unfortunately, cannot as yet be used, either because the product cannot yet be manufactured in sufficient quantities, or because an interval is necessary before the technique of its administration—or, in the case of surgery, the operation technique—can be perfected. False hopes are thus raised, and therapeutic experiments may be indulged in, which lead to disappointment and, sometimes wrongly, to more lasting disillusionment. The only solution for these difficulties is probably better medical instruction for, and a greater sense of responsibility on the part of, those whose task it is to inform the

public at large; preliminary censorship is unthinkable, and frequent medical news in the press meets a very clear desire on the part of the public. It would doubtless be impossible, and perhaps even unwise, to discourage this desire; a far better course would be to canalize this popular interest in things medical and use it to promote worth-while health education. To this we shall return later.

Social changes also play a significant part in the increase of the health budget. The demand for medicine is insatiable, and the burden it represents is rendered all the heavier by other social factors. Thus the expanding economies of great modern nations, combined with economic crises and international conflicts, have created currency instability in many countries, and this has considerably reduced the usefulness of personal saving. The individual citizen can scarcely hope any longer—in fact, he has given up hoping—that his private savings will be sufficient to tide him over illness. At the same time, the structure of the family has changed; the modern family consisting simply of the married couple and their children is more and more replacing the large patriarchial family of former times, when three generations lived together, and the bonds between, let us say, cousins of the same generation were still close. This family solidarity was a certain security for anyone who fell ill, since he could count on financial help and practical assistance from the family unit. This type of security has now, to a large extent, disappeared.

Furthermore, the general improvement in living conditions and cultural standards has rendered indispensable certain things which, until comparatively recently, were regarded as luxuries. Two centuries ago, the inmates of a hospital were not particularly shocked if several patients were accommodated in the same bed. Today, the big ward containing a very large number of patients is looked upon with increasing disfavour. Moreover, if we leave aside the pathology of acute diseases and enter a field which medical progress has made ever wider—that of diseases lasting over a lengthy period—individual wireless sets and group entertainment are regarded not only as normal but, medically speaking, as increasingly necessary. It is impossible to suppose that this desire for comfort will diminish in the future. Yet comfort is perhaps even more expensive than scientific progress.

Stress should also here be laid on the increasing measure of international tension which the existence of different medical standards in different countries might create. There is an economic definition of underdeveloped countries: it is related to the average income of each citizen or to the quantity of energy which, statistically, is placed at his disposal. There is also a nutritional definition of such countries: this is based on the number of calories and, more particularly, of the animal proteins and oligo-elements which each individual absorbs, on an average, every day. But a medico-demographic definition is likewise possible, on the basis of the death-rate

for the first year of age and the average expectation of life of each citizen. All these definitions tally, of course, and lead to a classification of countries more or less in the same order in each case. But it is not impossible that the less-favoured peoples become aware of their underdevelopment, first from its nutritional angle, and subsequently from its medical angle. In all underdeveloped countries (which are generally characterized by a very wide difference in wealth and living standards) there is a ruling class which has no difficulty in obtaining access to Western medicine in its most modern and sometimes most luxurious form. Can we be sure that the popular masses in these countries will long continue to regard such a state of affairs as normal? Inequalities in matters of life and death may well give rise not merely to social tensions within a country (the very tensions which public health and social security schemes seek to avoid), but even to international tensions, and it is not without reason that international organizations have been created with the task of reducing the most glaring differences between countries; the World Health Organization, the United Nations International Children's Fund, the Point IV Plan, and the Colombo Plan, all have, as part of their programme, assistance in the fields of medicine and health.

IV. PRESENT PROBLEMS

Indeed, one of the most burning questions of the moment is that raised by medical and health assistance to economically and, in particular, nutritionally underdeveloped countries: is there not some measure of competition, and even conflict, between the tendency to give priority (in underdeveloped countries) to food problems, and the tendency to proceed straight to the tackling of public health problems?

WILL MEDICINE STARVE THE WORLD?

The question might be asked somewhat humorously: does not the World Health Organization (WHO) threaten to undermine the Food and Agriculture Organization (FAO)? Should the former not lie dormant until FAO has made further progress with its work? Highly competent observers have pointed out that, for quite reasonable expenditure,[1] a considerable improvement in health can be obtained. It does not cost much to vaccinate a population against smallpox or clear a country of noxious insects, and the result

1. A. Sauvy, *Théorie générale de la population*, Paris, 1952, t. I, p. 350.

of these measures is a sudden and considerable increase in population, with which no agricultural plan can keep pace. In French Guiana, for instance, one insecticide campaign alone was sufficient to reverse the demographic trend. Thus it is alleged that action in the medical field has the effect of creating famine. Other observers,[1] no less clear-sighted, have drawn attention to the fact that improved health conditions enable a country's productive capacity to be rapidly increased, and that it is enough to co-ordinate the health plan with the agricultural and economic plans. But these theoretical arguments neglect two factors.

The first is of a political order. In reality, there is no choice; for the desire and the demand for food and medical attention grow simultaneously and, if an attempt is to be made to reduce international tensions, it is difficult to refuse to satisfy either of them. Similarly, it is hard to see how authoritarian and really effective birth-control methods could be imposed, from outside, on peoples whose nationalist reactions are often exacerbated.

The second factor is of a technical order. Those who are the most frightened by the inexpensive efficiency of preventive medicine, even though they admire it, do not take into account the exceptional and unique character of the results achieved. They consider that what is in fact a single, magnificent experiment can be repeated indefinitely. Everything which has so far been said about the cost of modern medicine will, perhaps, reassure them by showing them that there is little risk of the contingency they fear—i.e. that a medical scheme, because of its low cost, might constitute a permanent 'easy solution' for an underdeveloped country, and prejudice essential investment in the economic field. Regard must be had, firstly, to the vexatious and unpopular character of prophylaxis and, secondly, to the fact that preventive medicine very speedily reaches the point where the law of diminishing returns comes into operation.

THE UNPOPULARITY OF PROPHYLAXIS

Admittedly, when an epidemic of smallpox or plague breaks out, a terrified population can be made to conform to all the measures imposed upon it. But this is not what is meant by preventive medicine, which consists rather in subjecting healthy people—who therefore feel no need for it—either to positive and disagreeable measures (vaccination, the taking of drugs, etc.) or to an even more coercive regime that affects almost every moment of their daily life. e.g., by obliging them not to leave rubbish lying about indiscriminately, or by compelling them to drain stagnant pools. But directives of this kind are ill-tolerated, and their implementation involves persuasion or

1. Winslow, *op. cit.*

painful measures of compulsion. This will be appreciated by anyone who has seen how difficult it is to make a disciplined group, such as the army, take antimalarial medicaments as a preventive measure. Modern, civilized countries have been known to prefer the reappearance of smallpox to the maintenance of legally compulsory vaccination. One cannot therefore, as a general rule, hope to introduce a certain degree of preventive medicine into a country unless it is accompanied by a fairly high minimum of curative medicine, the latter being always welcome and sought after.

Furthermore, the distinction between therapeutics and prophylaxis is much less clear-cut than is often suggested. The examples hitherto quoted are, of course, classical examples of pure prophylaxis. But in other cases the gap between the two is closing rapidly. There is, for example, no other preventive treatment against venereal disease than to treat all those already infected with it. Apart from the B.C.G. vaccine, the prevention of tuberculosis was long synonymous with the action of developing a case-finding network to facilitate the treating of patients at an early stage in the disease. This should properly be called 'preventing the disease from getting worse or from becoming incurable'; in fact, it is none the less therapeutics proper, involving, in the case at issue, costly and prolonged care. There are even cases in which prevention and treatment are complementary. With malaria, a purely human disease transmitted from man to man by mosquitoes, complete prevention requires not only an anti-mosquito campaign, but the destruction of the virus breeding-grounds, which is tantamount to rigorous treatment of all malarial patients.

The example of malaria goes, indeed, to show the purely theoretical nature of the 'conflict' between a medical and an agricultural plan; for the anti-mosquito campaign involves the development of a controlled irrigation system and the increase of livestock—in fact, the modernization of a country's agriculture, which is the only method of securing satisfactory long-term results; this is a repetition of the process whereby a decrease in malaria was arrived at in Western Europe during the nineteenth century. In a certain sense, the only value of the more rapid methods of combating anopheles mosquitoes, and of the taking of medicines, is to facilitate the implementation of such an 'agricultural' plan.

THE LAW OF DIMINISHING RETURNS IN PREVENTIVE MEDICINE

Preventive medicine very quickly becomes subject to the law of diminishing returns. In order to understand this fully, it must be realized that the term 'preventive medicine' today covers a very large number of notions, and represents an entity which has a whole history behind it and is characterized by several easily discernible layers or categories.

Of these, the oldest is that of health inspection and sanitary conditions—two problems which the Western countries had to solve in the course of the nineteenth century. The object of these measures is to protect individuals from the dangers to which life in society exposes their health. Marshes are drained; sea and, if possible, land frontiers are the subject of quarantine measures against the entry of infected people or animals; a curb is placed on the setting-up of dangerous and unhealthy industrial establishments in towns; an attempt is made to provide up-to-date water, drainage and sewage installations; the circulation and sale of toxic products is supervised, and food frauds are repressed. The last stage in this historical process is the declaration and isolation of infectious persons, and the disinfection of everything with which they have come in contact.

To say that this is the oldest problem in no way means that it is outdated. Not only underdeveloped countries, but even advanced nations, have always room for progress in this field. They can, for example, improve their water or sewage systems; keep a check on the ever more varied types of dangerous industrial establishment; and keep (as they have done for the last few years) a watch on their air frontiers, the swiftness of air communications having considerably increased the risk of epidemics. One problem is, in any case, a permanent one—that of controlling the professions whose members claim to look after the health of their fellow citizens (rules for medical practice, supervision of the sale of products claiming medicinal properties). Indeed, progress in medicine and chemistry makes this last type of supervision ever more complex and more indispensable.

The second category of preventive medicine consists of specific medical measures for the healthy. The second centenary of anti-smallpox vaccination will shortly be celebrated; other forms of vaccination and inoculation—against typhoid, diphtheria, tetanus, yellow fever, tuberculosis, whooping-cough, etc.—are of far more recent date. Methods for the medicinal prophylaxis of malaria may be included in this category. Such methods, equally, are not outdated. On the contrary, they are more useful than ever, for in considerable areas of the world they have led to the complete elimination of certain diseases; and, as an imported case of one of these diseases would no longer find a population partially immunized by previous infection, whether apparent or latent, this spontaneous, 'hidden' immunization must be replaced by vaccination and inoculation.

The third category differs as much from the second as does the second from the first. It is characterized, in fact, by the policy of systematic examination of healthy persons, with a view to discovering whether they are suffering from diseases without knowing it (this possibility stems from the development of objective medicine), and if they are, to treating them at a stage when the disease is more easily curable. Measures of this kind have been largely responsible for the disappearance of venereal diseases, and have considerably

diminished infant mortality and mortality from tuberculosis. Attempts are being made to apply them—though the process is difficult and of varying efficacity—to cancer, rheumatism and mental diseases.

We have, finally, an 'upper' category, corresponding to problems of the future. The diseases from which we still suffer today, even after the success of the three preceding methods, represent that residue which has escaped our efforts, and our only present defence against them consists in attempted measures of prophylaxis which are still at their experimental stage, and in co-ordinated scientific research. The prophylaxis of cancer, mental diseases and nutritional diseases is at present at this experimental stage.

Only the methods of the second category, of course, are inexpensive. At the stage so far reached, the methods of the first category nearly all involve difficult engineering work which becomes exorbitantly costly by reason of the development of modern civilization's giant cities. The third category has to do with medical care, and there is no need to revert to its cost, any more than to the cost of scientific research.

Certain consequences stem from the developments just analysed. For instance, it was long thought (and this was actually one of the arguments put forward in favour of the panel system) that it was desirable to make the doctor financially interested in preventive medicine; and a somewhat facile distinction was drawn between the doctor who earned his livelihood from each of his patients' illnesses and the doctor who was paid to keep his patients is good health.

At a time when, or in countries where, the major preoccupation of pathology was smallpox, a doctor paid on the panel system obviously had a direct interest in vaccinating his patients rather than in going to see them twice a day for the same price when they were suffering from a serious illness, and running the risk of losing them. But this type of organization is out of the question for modern Western pathology. The doctor can hardly prevent his patients' ulcers and rheumatism. A distinction of this kind can only validly be drawn when preventive medicine is in the second or third category mentioned above. In modern countries, where preventive medicine is either at the 'engineering' stage (first) or at the scientific research stage (fourth), measures of this type are of no technical value, and it is hardly worth while considering this argument.

SOCIAL RE-ADAPTATION

We must mention here a current possibility of extending preventive medicine of the third category, which provided, as was explained, for the prevention not so much of sickness itself as of its aggravation, by a process of tracking it down in time and combating it by a rapidly effective treatment. A very

similar problem is at present arising in regard to a large number of chronic diseases which leave after-effects and result in infirmities that reduce the individual's social output. In this case, the doctor must quickly decide what are the limits of the treatment he has prescribed, and what is the objective to be attained: even where complete recovery cannot be hoped for, it is still possible—sometimes, at any rate—to re-adapt the enfeebled patient to a useful social existence by showing him how to employ the working capacities that have been left him. Clearly, the practitioner cannot perform this task unaided. He needs, not merely specialized centres and technicians, but, and above all, adequate co-operation from society, which must help the patient in question to take up work again. Even that is not enough. The most important aid must come from the patient's own mentality, and this the doctor must endeavour to condition correctly right from the outset of the illness. Re-adaptation will be all the easier if, from the very beginning of treatment, steps have been taken to prevent the patient from becoming 'dis-adapted' and he has not been allowed to lapse into a morbid state which, though real enough at first, can in some cases simply serve thereafter as an unfortunate alibi. This is all the more essential as the technical development of medicine is increasingly confronting us with chronic illness and elderly patients—two cases where it is vital to fight against everything that, in public opinion or in the patient's mental outlook, conscious or unconscious, aids and abets a chronic condition.

V. PSYCHOLOGICAL DIFFICULTIES

Any technical development, especially a rapid one, provokes in those who have to experience it, and who are often its passive objects rather than its active participants, maladjustment reactions which might almost be described as collective neuroses—to borrow a psychiatric term. It is interesting to analyse summarily the syndromes of maladjustment, for these psychological difficulties impede not only the proper functioning of present health systems but also the search for adequate solutions, and frequently obstruct a clear view of the concrete problems that actually arise.

Medical consultation, for long a private dialogue, has now become a play with many characters—the doctor or doctors, the patient, and society as represented legally by the authorities and sociologically by public opinion. Maladjustment affects each of these three groups.

THE PATIENT'S CONFUSION

It is the patient's maladjustment that is the simplest and easiest to describe. Everything has passed beyond his understanding, and he feels like a pawn in the game. This is because medicine, in becoming a science, has been transformed (like thermodynamics or nuclear physics) into something which can only be understood from within, and after long studies. There is of course nothing esoteric about it, and its general principles can be encompassed by a normal intellectual effort, involving no exceptional vocation and requiring no outstanding brilliance. It is even possible to acquire certain practical medical knowledge, in the same way as a difficult theorem may be learnt while its proof remains a mystery. But it is impossible to explain medicine to a sick man, for what cannot be transmitted except by a long personal effort consists precisely of the essentials—the inductive, concrete method which proceeds from fact to fact, the wealth of experiment by which each statement is backed, and medical language itself. This language is full of traps, and the best known are not the most dangerous. Clearly, when building up its object, medicine must simultaneously build up its language. It is no easier to describe Hodgin's disease, or acute leukaemia in everyday language than it is to find everyday words for a curve of the fifth-degree, or the notion of entropy. It is childish to define new objects by old words, or to make fun of the havoc that doctors wreak in the garden of Greek roots. But doctors have also retained some words of everyday speech, and this trap, for being more subtle, is all the more dangerous. The word 'cancer', for example, does not mean the same thing to the technician as to the patient. For the patient it signifies a terrifying disease. For the doctor it signifies a series of facts which vary radically in gravity, from types of cancer which are always fatal to other types which are practically benign (as in the case of basal cell epithelioma of the skin), and which, though they have certain common anatomical characteristics, probably result from multiple causes and demand very different decisions according to each individual case.

The patient thus understands nothing, and indeed cannot understand anything. Clearly, modern man who can get light by turning an electric switch, who has only to turn another switch in order to watch television or listen to radio concerts, and who crosses oceans in a few hours by air, should be accustomed to living in an almost entirely man-built world, which he could theoretically understand but of which, in fact, he understands nothing.

His psychological position is no worse than that of the primitive man who lives surrounded by natural forces which his thought and rudimentary knowledge cannot penetrate. In reality, the world of primitive man is stable, it does not change; it is thus familiar to him, for man is never surprised by a familiar sight unless he happens to be a philosopher. Anything new, on the other hand, needs explaining, and we are vexed by what we fail to under-

stand. A housewife may quickly grow accustomed to using an electric cooker, refrigerator or washing-machine while knowing nothing about how they work, and she may be prepared to call in an electrician and pay his bill if the apparatus breaks down; but in the case of medicine this failure to understand is for the patient psychologically much more serious, since it is a question of his own flesh, life and fate. The patient is not easily resigned to others knowing him better than he does himself, to seeing the slightest secrets of his life indifferently guessed at by a stranger, and to finding that the latter discounts certain peculiarities or incidents to which he himself attaches great importance. Man thinks himself unique and, in fact, in a certain metaphysical sense, he may be; but in actual practice, the daily experience of confessors, doctors, barristers, publicity agents and electoral machines lead ever more firmly to the conclusion that man is essentially commonplace.

Thus a link is formed between the two causes of the patient's maladjustment—failure to understand, and the feeling of being an object. But for the doctor, the patient is, and must be, an object. The doctor has to treat Peter as if he were diphtheria, Paul as if he were a cancer of the stomach and Jack as if he were diabetes. It is well known that the introduction of any kind of emotional factor into diagnosis and treatment is very dangerous for the patient. The worst mistakes are made by the doctor when treating those who are either near and dear to him or who are impressive and intimidating personages. The oriental potentates of antiquity who thought they would be better treated by condemning to death the doctor who attended them in their final illness were probably less efficiently treated for that very reason.

But being an object is especially terrible when, as frequently happens, the doctor is expected to give some kind of help, e.g. a certificate of fitness for work or of entitlement to a few days' rest.

It is not surprising that, having become an object who does not know what will be done to him, the patient's psychological attitude towards doctors and medicine is one of distrust. The psychological changes characteristic of modern democracies undoubtedly combine to deepen this distrust. Mankind has long been accustomed to authoritarian solutions from above, and resigned to obeying the established authorities. But today the masses are ever more conscious of their maturity, and reject leaders whom they think, sometimes wrongly, that they have not chosen themselves.

Symptoms of this maladjusted outlook on the part of the patient can be seen, not only in the endless stream of questions which every doctor has experienced, but in certain group attitudes. Very frequently, refuge is taken in magic. In all countries of the world, various forms of occultism and scientific charlatanism (vast systems always easier to explain and to follow than real science) wreak considerable havoc. This retrogression towards a pre-logical state of mind is all the more comprehensible in that it consists, in practice, of reincorporating psychological forces into sickness—exorcisable

demons, and benevolent spirits which can be moved to pity. Another form of group reaction is the obstinacy with which the patient seeks to make some particular source—usually another person, or society in general—in some way responsible for his illness. There is a chain of continuity between the attitude of the primitive man, who believes himself to be possessed or struck by fate when he is ill, and that of the modern man who looks for the origin of all his ills in his working conditions or in his emotional dramas—all of which accounts for the popularity of psychosomatic medicine in uninformed circles.

In France, patients have even formed associations; by assimilating, rather ingenuously, the relationship between employers and workmen to the relationship between doctors and patients, such associations of medicine users have believed they could exercise an influence which the isolated individual was unable to do. Obviously, patients' associations may be of use; 'Alcoholics Anonymous' in the United States and associations of diabetics throughout the world have shown what can be achieved by doctors and patients working together, but it is unfortunately certain that illness of itself does not confer competence in medicine.

THE DOCTOR'S REFUGE

The doctor's attitude is hardly less maladjusted than the patient's. Everyone knows that a doctor, when he is ill, is the most difficult of patients. Even when he is treating illness, the doctor regards his science rather as if it were a dangerous explosive placed in his hands by other people for purposes unknown to him, and he is often, in his work, a prey to a certain form of anxiety and uneasiness. Symptoms of this can be seen in his frequent refusal to appreciate the present implications of medical practice, and in the fact that pressure has always had to be brought to bear on him to take part in the various systems of modern preventive and social medicine. He tends to take refuge in the dream of a golden age which has recently come to a close, and reconstructs the immediate past to extol the period when medicine was no more than a dialogue between two human beings, the one contributing his confidence and the other his conscience and competence.

A practical result of this is the tendency of doctors to fall back upon themselves, as well as the growing part played by their professional organizations throughout the world. Doctors, for long the most individualist of men, were some time in learning how to organize themselves; today, however, their corporate organizations are very live concerns, and are federated at the international level. The doctor's general attitude reveals his immense distrust of social initiatives, and indicates his preference for solutions emanating from within the medical profession. 'Leave medicine to medical men' is

the slogan which can be read into a number of scattered enterprises, such as the organization of professional tribunals in France, and that of private health insurance concerns in the United States. This withdrawal of the medical profession into itself is probably a great mistake; for if a profession wishes to play a real part in an organization to which it is essential and in which it has important claims to put forward, it is more likely to obtain the influence it needs by integrating itself into the nation, and by multiplying its contacts in all social spheres.

Clearly the authorities would commit a grave error if they attempted to carry on medicine without doctors, or aroused the latter's systematic ill-will. Yet it seems out of the question that the citizens' health should be entrusted to a technical body, and that the political authorities should not retain the right to select the nation's higher objectives.

Another type of maladjustment in the medical corps, and one particularly encouraged by public opinion, stems from the doctor's growing tendency to specialize. Such specialization is of course necessary, and the physician who does a certain amount of surgery and ear, nose and throat work is virtually a thing of the past. Medical science has become so vast that it is very difficult for a man to master a large sector of it and keep abreast, day after day, of the extremely swift development of techniques. Specialization is, therefore, a fact which must be accepted, and a tendency which, in a certain sense, will become more accentuated.

None the less, specialization involves very serious risks. The first arises from the fact that patients do not have the natural gift of self-diagnosis. Many of them, in going straight to consult the specialist they consider appropriate, knock on the wrong door. More than half the people who apply to a gastro-enterologist should, in reality, apply to a psychiatrist.

Furthermore, certain forms of specialization obscure the complete entity which a patient, or even an illness, represents. For the last 25 years, ophthalmologists, dermatologists and chest specialists have studied facts which seemed to them to be new, without realizing that a synthesis of their work was essential if they were to understand a new morbid entity, now known as Besnier-Boeck-Schaumann's disease.

Finally, the movement of science itself shifts the boundaries between specializations, quickly and without warning: it removes some of them, and simultaneously sets up others. A quarter of a century ago, one instance of outstanding observation was enough to remove *osteitis fibrosa cystica* (Recklinghausen's disease) from the field of bone diseases to that of parathyroid endocrinology. Sulfa drugs and antibiotics have been responsible for the disappearance of an entire complicated field of specialization, viz. the treatment of gonorrhoea in the male. Penicillin has destroyed syphilogy and has restored the treatment of syphilis to the field of general medicine; and an irresistible movement is carrying phthisiology in the same direction.

In short, specialization represents a danger for the patient and involves certain risks for the doctor. It should not, of course, be condemned outright; but it must be borne prominently in mind that it is always useful, and sometimes vital, for a general practitioner with a certain knowledge of current specializations to send the patient to the specialist whom the case requires, or to guide his choice of specialists. It will always be essential for the specialist to have a very wide experience of medicine before he embarks on specialization, and to possess sound general medical knowledge. He will thus be able both to avoid keeping over-long a patient who has come to him by mistake, and to change his field of activity if, by any chance, his current field were eliminated by medical progress.

THE PROBLEM OF THE PARA-MEDICAL PROFESSIONS

A certain apprehension is justly felt at the world-wide development of a twofold splitting movement in medical affairs. Medicine is everywhere being split up, internally into increasingly independent specializations, and externally by the establishment of truly para-medical professions which likewise tend to become more and more autonomous. True, some of these professions have always existed; and there can be no question, for example, of looking askance at the necessary specialization of a distinct profession—the pharmaceutical one—responsible for the supervision and distribution of medicines. The day of the doctor who distributed his own drugs is over.

In addition, it is normal that certain material tasks be reserved for nurses, under medical supervision. The growing complexity of techniques has made nursing an ever more specialized profession, demanding longer studies and ever higher standards. It is certain that massage, mobilization[1] and the application of physical methods of muscular re-education make specialized assistants essential. In the same way, certain new departments of medical activity have necessitated the training of new technicians—X-ray technicians, biological laboratory assistants, and so forth. Likewise, the psychiatrist is increasingly entrusting his psychological tests, and even certain phases of psychotherapeutic treatment, to assistants who have received higher training in psychology but have very little knowledge of psychiatry, and no medical education at all.

These professions and those who practise them continue to grow in number, as their role continues to expand. Simultaneously their average standard is rising, and their higher grades bear comparison with the lower grades of the medical profession. The status of these professions, however, poses a number of problems. They are nearly all on a dangerous slope which

1. As opposed to 'immobilization' of the patient.

can cause them to slide into practising medicine illegally—a particularly noxious development in their case, since such practice will be carried on by quasi-experts with a higher level of culture and competence than that of ordinary quacks. The danger menacing the over-specialized doctor whose educational background is inadequate menaces to an even greater extent people in these professional categories. Moreover, like all specialists, they are threatened by scientific progress, which may suddenly face some of them with problems of adapting themselves to another field.

For example, the profession of midwife—the oldest of them all—is at the moment going through a very serious crisis in every civilized country. While its usefulness in countries where there are not enough doctors is still unquestioned, in the West the midwife is squeezed between the medical profession, whose ranks are adequate to deal with normal child-births, and the nursing profession, which has acquired an authority and technical skill equal to that of the midwife. Much the same could be said of the dental profession. In certain countries, like Italy, the dentist has been completely absorbed by the doctor. In others, not only is there a dental profession but, as in England, the trend is in favour of the rapid training of dental nurses and auxiliary dentists capable of dealing with ordinary cases, since there are not enough qualified dentists to meet the demand. In any event, it would need only one scientific discovery—that of effective preventive treatment against dental decay, which we may be on the verge of achieving—to force this para-medical profession to seek other outlets for its knowledge.

However, despite these sometimes clearly visible dangers—some of which are actual, not merely contingent—the proliferation of para-medical professions continues. This appears to be due to three main reasons. The first is the considerable increase in the demand for medicine, which, all over the world, has outgrown the number of doctors available. This has been dealt with. The second is the attitude of the authorities in most of the countries which, having to inaugurate medical services, favour the use of para-medical staff, firstly because it can be trained more quickly, and secondly because it can be paid less than doctors, and finally, in all probability, because, being less well organized internally, it is much more docile than medical staff.

But—and this is the third consideration—it is indisputable that much of the responsibility for this lies with the medical profession. The latter, in almost all countries of the world, has followed Malthusian policy. It has obstructed the training of new doctors, for fear of a glut; it has ignored the constant increase in the desire for medical treatment; it refuses to recognize that hundreds of millions of people (probably more than half the world's population) have no doctors; and by this attitude it has itself encouraged the appearance of these dangerous competitors. In any case, it is certain that tens of thousands of men and women are now working in the para-medical professions.

It is perhaps not yet too late to grapple with the problem thus created—by considering on the one hand whether, in the interests of the para-medical professions themselves, a brake should not be placed upon the expansion of the ranks of these over-specialized assistants, and a return made to the small number of categories which previously existed; and, on the other hand, by doing something to enable those assistants who show the necessary keenness and energy, to rise to the medical level in circumstances adapted to their experience, and to complete the necessary extra studies. This reserve of manpower thus used might lead to the infusion of some new blood into the medical profession.

THE INADEQUACY OF THE AUTHORITIES

Nor can any surprise be felt at the confusion which reigns in public opinion and among the authorities themselves. The latter receive complaints both from the professions concerned and from patients, that is to say from all sides. But nothing productive can emerge from the emotional forces thus brought into play; and it is not surprising that no coherent policy can issue from them. This would, in any case, necessitate the political and administrative authorities being so organized as to obtain detailed information on health problems; once informed in this way, they would require the services of technical bodies capable of suggesting practical solutions for concrete problems. Only recently have modern states come to understand that their economic responsibilities compel them to establish statistical organizations and market research services capable of forecasting economic trends, as well as economic services capable of promoting an economic policy. A similar need has been felt in the field of public health; and the setting up of such information and executive services is even more recent.

Thus the authorities are very ill-informed. In most civilized countries mortality statistics are fairly good—though their basic elements are often badly assembled, the reasons for death being much less well known than is imagined. Medical diagnoses are in fact often very uncertainly and negligently made, and inaccurate nomenclature is often employed. Only certain hospital statistics, covering systematic autopsy, are fairly precise; but they are rare and unrepresentative. No country in the world has succeeded in giving valid figures for morbidity; yet certain social scourges are more interesting from the standpoint of morbidity than from that of mortality. In these circumstances, public opinion and political leaders often concentrate on trivial questions, to the detriment of problems meriting priority. Priority really depends upon two factors: the incidence of the scourge, and the technical conditions for combating it. But the degree of incidence is unknown, and the technical conditions are known only to a small number of specialists,

who do not necessarily have the ear of the public and often make no attempt to have it.

Moreover, with the exception of the military medical service, state health services are nearly always of extremely recent date. In France and Great Britain for example, Ministries of Health made a modest appearance only after the first world war. Such bodies have not yet found their feet, and in all countries of the world the health activities of the state are characterized by a wide measure of dispersal. Thus, the education authorities retain their hold on the problems of medical supervision in schools and universities; the Ministries of Labour monopolize the question of the medical supervision of industrial workers, and the agricultural authorities deal with veterinary problems, even in their medical aspects (such as the supervision of milk, meat and certain other food products), as well as with the medical supervision of the agricultural population. Each department has tended to set up its own little health service, rather than allow the creation of a central body equipped with a sufficiently numerous and qualified staff and having a broad enough general view of the problems to work out an overall plan —a body, that is, capable of real effectiveness.

Under these conditions, it is no matter for surprise that the authorities, ill-informed and ill-equipped for action, should have attacked health problems with the help of men and techniques which they were used to handling. As a result, they have regarded these problems as being one particular aspect of social questions and have, more often than not, neglected their technical character.

Their reactions have been primarily those of financiers. The natural reaction of the financier is to reduce expenditure, and he capitulates only at the last moment in face of the demands of technicians or of public opinion. But public opinion, ill-informed from the technical standpoint, also opts for ill-advised courses precisely because it reacts like the financier—though with a taxpayer's mentality—towards increased and increasing expenditure. Most countries at present are at one in the opinion that, whatever happens, there must be a ceiling to the increase in health expenditure. Such a ceiling simply stabilizes the existing situation, because no country dare challenge acquired habits, which quickly become acquired rights. It is enough to define such a situation in order to show how untenable it is, for it takes no account of the evolution of medical science, and it amounts, either to taking no advantage of progress made, or to sterilizing all such progress. The hope (if one can use the term) of fixing a ceiling is illusory, since it is hard to see how public pressure provoked by the sudden announcement that a new and effective treatment for malignant tumours had been discovered could be resisted by any authority, whatever the cost might be.

This taxpayer's and financier's reaction should, of course, not be entirely neglected. What is true of the least developed countries is equally true of

the richest ones: expanding health needs can only be met by an expanding economy. Moreover, public authorities are entitled to require of technicians that they should systematically study every possibility of effecting economies in their sector; yet economic studies and productivity surveys are still in their infancy in the medico-social field.

This must not, however, be a one-way attitude. When a new opening appears, there is a transfer of individual and collective choice. When the motor-car and television were discovered and developed, individuals and society, in order to use these new inventions, made certain sacrifices and renounced, rightly or wrongly, other satisfactions or former habits. A hundred years ago, the sum set aside for health expenditure was infinitesimal both at the individual and at the collective level; and no increase was necessary, because no better results could have been obtained for a higher cost. Now, on the other hand, considerable possibilities have been opened up, and they can only be developed by a change in personal and collective habits. Provision must be made for this new expenditure and a number of sacrifices must accordingly be made; certain activities may have to be given up which, compared with health, might appear to be in the nature of luxuries. The health industry would seem to be a dangerous competitor for a very large number of other activities. But there are probably a number of satisfactions which could legitimately be renounced in the interests of better care for a larger number of patients.

VI. THE SEARCH FOR FUTURE SOLUTIONS

It would seem difficult to try to forecast the future otherwise than on the basis of the foregoing conclusions—uninterrupted and, very probably, accelerated technical progress, coupled with an increasing desire on the part of more and more people to share in the benefits held out by an expanding science of medicine. It is, then, from this 'optimistic' standpoint that solutions should be sought.

The future will, of course, have to solve problems other than those which can be analysed today. But the most urgent question is to decide how to solve present difficulties. This can only be done through more adequate organization of the authorities concerned, and through better adaptation of both the medical and para-medical professions to their daily task, and of patients to current medical conditions.

RESPECTIVE ROLES OF THE STATE AND OF INTERMEDIATE ORGANIZATIONS

So far as public authorities are concerned, a simple analysis of the situation seems to make certain points fairly clear. The community is now definitely installed as a third party in the very heart of medical activity—in the relationship between the doctor and the patient. Efforts may be made to limit the part it has to play, but it cannot be reduced below a certain level, which is already very high. It has to intervene in many capacities—firstly, as an authority, in connexion with measures of compulsion and propaganda that become increasingly essential; secondly, as a modern state, a supreme body responsible for economic and social planning (whether such planning be liberal and based on encouragement, or authoritarian and based on orders). Again, the community must intervene because it, alone, has the necessary financial resources at its disposal. When therefore we think of the community in this context, we think first and foremost of the state. The latter alone has the power to coerce; moreover, only at state level can reliable information and sufficient working resources be assembled to enable a choice to be made between the different investments required for the satisfaction of extremely varied needs; and the expenditure is so considerable that no organ lower than the state can hope to meet it. The actual structure of the state is of secondary importance in this context. There are administrative, authoritarian planning systems; there are also flexible systems, giving free play to private initiative and using the more subtle mechanisms of persuasion, subsidies and credit. But in any event, it is the modern form of state with which we are here concerned.

Such a position is not everywhere accepted without question. On the contrary, in a very large number of countries it is strongly emphasized that social and health matters should be left to institutions closer to the user and more independent of the government and the central administration. This attitude is a survival from the period when health problems arose solely from the angle of public assistance. The only public assistance problem in earlier days, before the appearance of modern medicine, when this form of relief was relatively cheap, was deciding who should be eligible for it. Historically, public assistance grew up at the level of the small rural community or small borough—generally within the parish framework. The secularization of assistance made it a municipal or communal responsibility. It seemed, in fact, that if the choice of the beneficiary were made by those who knew him, it would be more calculated to meet real needs; this method had the double advantage of leaving to public assistance its emotional character of a human gesture of sympathy and solidarity, and simultaneously of preventing abuses. The notions of 'humanization' and of control, although somewhat contradictory, are still daily advanced in support of this system.

But it is sometimes forgotten that the development of towns and the

growing isolation of the individual in our urban civilization very often make this kind of argument unrealistic. In view of the increasing incapacity of the municipality to be anything more than a channel between the assisted person and the central authorities, many other systems have been proposed. The authorities of the small territorial division—the county in Great Britain, or the *département* in France—are already far removed from those receiving assistance, and their resources are hardly greater than those of the municipality. Private charitable organizations are weakening in every country and becoming increasingly dependent on state subsidies,[1] and it is becoming more and more doubtful whether it is advisable to use them as a channel for public funds. Private insurance never rendered any real service in such an unprofitable sector, not even in those countries where its resources were greatest and its role most active, as in the United States;[2] in most countries like France and Great Britain, private insurance has not even attempted to play such a part. Friendly societies did at one time take over the work of parish charity, but financially they were never able to bear the cost of current techniques, and either sought public subsidies or endeavoured to introduce systems of 'medicine at bargain prices' which, in France and Britain raised the strongest opposition from the medical profession. Again, a commercial enterprise, to be useful in this sector, must be a very large one; moreover, one comes up here against a very serious psychological problem, as one does with all measures that bind the workman too closely to his factory and make him virtually a prisoner of the employer. In fact, nearly every such organization is obliged to establish itself on the national level, the only level at which it is possible to ensure proper risk compensation and coherent and simultaneous planning in the triple field of prevention, care, and investment in equipment and specialized establishments. These national organizations may be run by the state, as in Great Britain, or they may be private bodies, as is the case of the chief systems of social security; the difference is but slight.[3]

In reality, recourse to small-scale organizations becomes ever harder to justify. Of course, the higher an organization's level, the larger it grows, the more it becomes bureaucratic in structure and the harder to manage. This disadvantage should be noted, but such considerations have never yet led any general to advocate the dissolution of modern armies and of their

1. J. H. Vanderveldt and R. P. Odenwald, *Psychiatrie et catholicisme*, Paris, 1954, p. 347. In 1929, 98 per cent of the funds reserved for the poor were 'private', both by origin and by method of distribution. In 1949, 98 per cent of these funds were 'public'.
2. According to certain sources in the United States of America, insurance systems cover 50 per cent of hospital charges, but only 13 per cent of medical and surgical expenses, 10 per cent of dental expenses, 1 per cent of pharmaceutical expenses and 1 per cent of nursing expenses; only 26 per cent of people over 65 in the United States of America are covered by insurance against hospitalization.
3. Non-state systems of social security are at present in force all over Western Europe and America. They are derivatives of the system which Bismarck set up in Germany at the end of the nineteenth century.

logistic apparatus in order to return to guerilla formations. Large, high-level organizations are often accused of being lacking in human qualities; but this argument is too facile to be taken seriously. The anonymous character of a large organization often provides a better safeguard for professional secrecy than do the restricted dimensions of a small organization. Furthermore, the 'humanizing' of an institution depends, not merely or even primarily upon its size, but upon its technique. The relationship between a policeman and the individual whom he arrests is a man-to-man relationship, but this does not always make it any pleasanter; and, in matters of justice, an organization based on rigid rules and clear procedures is certainly an improvement upon jungle law, which is an affair between individuals only. Whether a hospital has 50 or 1,000 beds, the problem of making it 'human' arises in exactly the same terms and demands the use of more or less the same techniques: the patients should be divided into small groups; the staff should be sufficiently numerous not to be overworked, and should be so educated and instructed as to ensure that the patients are treated with the required skill; and the hospital should be so equipped technically as to make the patients' stay in it more pleasant (the organizing of entertainment, for instance, will often be easier in a large establishment). Making our systems 'human' would seem to depend much more on the organization of public relations services, and on the setting up of social services equipped with a sufficient number of well-trained social workers, than on the size of the systems themselves.

To try to deal with problems on too small a scale is impracticable, not only for financial but for technical reasons. It results in certain problems being left on one side. To take an example, the anti-tuberculosis campaign in France was organized on the level of the *département*. The result has been that certain forms of tuberculosis—like tuberculosis of the skin, of the kidneys, or of the eyes—have been paid insufficient attention, and that there are no establishments for these categories of patient. No single French *département* had, in fact, enough patients of this type to have the problem brought home to it, and it was not prepared to draw upon its meagre resources for the purpose of investing in a hospital which, in the main, would have assisted all its neighbours.

Local authorities are always somewhat reluctant to spend money on anything that goes beyond satisfying their own needs. They always tend to draw up a list of priorities, at the head of which come projects that they themselves can carry out for their own benefit, even if the work involved is neither the most useful nor the most urgent. Thus the small risk is systematically chosen in preference to the large risk; the state is asked to take in hand whatever is costly and difficult, the idea being that urgency will force its hand; while local schemes often meet certain semi-luxury needs. The vastness of the investment now required is incompatible, and will become increasingly so, with the continuance of this waste. The moment will come when the cost

will be so high that certain small risks may have to be left financially unprovided for, if there is to be any hope of the large risks being covered; and the choice involved can be made only at the national level.

Moreover local authorities, like individuals, are not all equally rich; and the richer ones will naturally find it easier to make the required effort. If the state does not intervene to even things out, we run the risk of seeing inequalities between groups within each nation grow ever greater—whether these groups be towns, regions, firms or professions. The spreading of this sort of inequality is clearly a danger to social peace, and cannot be tolerated in any well-organized modern state.

Does this mean then, that the role of the intermediate or local bodies can be dispensed with? By no means. It is simply a question of defining clearly what they can do better than the state, and of properly circumscribing their tasks. They should always be consulted about the drawing-up of a plan, and their suggestions and wishes should be taken into account, even though these be subject to criticism. They can obviously be excellent agents for carrying out a plan. It is certainly, also, at their level that the various parties concerned —technicians, administrators and users—can best be combined in the same enterprise. They can be good supervising agents. Finally, they are the best framework for effective health education, and one within which national requirements and the desires of consumers can be admirably compared and misunderstandings dispelled.

THE NATION—TOO NARROW A FRAMEWORK

At the same time, it seems to be becoming ever clearer that, in many respects, even the framework of the nation has become too narrow. Many small and insufficiently wealthy states could be subjected to the same criticism as that which applies to intermediate bodies within a large modern state. The difficulties arising from the constantly widening gap between public health achievements in the different countries have already been underlined. This situation has an economic aspect. The cost of organizing health services satisfactorily in a given country should be taken into account when assessing that country's costs of production. Countries that provide their workers with a high standard of living and a proper coverage of social risks will clearly find their prices rising in proportion. They will thus be at a disadvantage in international competition, all other things being equal, vis-à-vis countries which can produce more cheaply by paying their workers less or providing them with less highly-developed medical insurance systems. This might, of course, either undermine the economy of the socially advanced countries, or oblige them to carry out a downward adjustment of their social standards.

For this reason the role of international organizations dealing with health

problems should become ever more important. Not only, as has always been thought, should they be the meeting-place for comparing the experiments of technicians from every quarter; not only, as has already been said, should they reduce certain international tensions by supplying technical and financial aid to underdeveloped countries; they must perform a parallel function in respect of countries which are in the van of progress, and should try to ensure that certain perfectly sound health systems are not jeopardized for economic reasons; in other words, they must seek to bring about a 'levelling upwards'.

In addition, these international authorities must be equipped with certain powers of compulsion, particularly in the field of large-scale epidemics; microbes know no frontiers, and anti-microbe campaigns demand a form of administration that is not too much hampered by such frontiers.

DOCTOR-ADMINISTRATORS

It is unnecessary to revert to the need for modern states to have proper administrative machinery for dealing with health questions. But the necessarily technical character of such machinery must be emphasized. A purely administrative organization and experts in social problems are not enough. Technicians with nothing less than full medical training are required. Such training will nearly always have to be supplemented, but it is essential as a basis. Simply imparting a few notions of medicine to a social administrator or a mathematician is not enough to make a good health administrator or a good health statistician; one can occasionally team together a doctor and an administrator, or a doctor and a statistician; but it is vital to train doctors who will accept the supplementary training, legal or mathematical, which will make them into administrators or statisticians.

It is even probable that, in a few years' time, the number of posts for which medical training is necessary will be greater than it would at present appear. The number of doctors employed on administrative work in local, national and international organizations is constantly increasing. For instance, it is becoming less and less practicable to entrust civil servants having no medical training with the administrative direction of health establishments. Educational establishments and factories are almost always managed by teachers or qualified engineers who have acquired some administrative training. In appointing people to direct any organization in which complicated technique is involved, it would seem essential to seek men who are familiar with the objects of that technique, and understand it from within. Only the general scarcity of doctors has hitherto limited the latter's employment in this capacity. It is therefore very much in the interest of the community—and likewise of the medical profession—to bring about a gradual change of attitude in this direction.

Public authorities will have to continue to add to their medically trained staff; even so, this alone will not enable them to deal with all health problems. Whatever a country's political and social system may be, its citizens' health depends, in the last analysis, on the individual acts of practitioners in the medical and para-medical professions as a whole. The problem therefore arises of how to associate all these professions in the execution of a co-ordinated, though sometimes flexible, plan of public health.

RELATIONS BETWEEN THE AUTHORITIES AND THE PRACTITIONERS

Relations between the medical profession and the state cannot be resolved on the purely professional level. At least, it would seem very improbable that endeavours of this kind, which have tempted certain members of the medical profession, would be likely to meet with success. If, in the unusual circumstances of a political upheaval in some state or other, a sufficiently well organized medical profession were to be given charge of a public health plan, it is clear that such a success would be short-lived; for the social and economic reasons already mentioned, the state would soon establish a close supervision over this medical 'corporation' and, indeed, over each and every practitioner.

The existence of national (and international) professional organizations of doctors has often led to a solution of the problem being contemplated through negotiations at the national level between professional organizations and governments. Thus the institution of the National Health Service seems to have been the result of a long succession of negotiations between two 'powers', the British Government and the British Medical Association. The British Parliament itself seems to be, at times, simply a record office for the agreements concluded between the two parties. The American Medical Association and the Confédération des syndicats médicaux français likewise negotiate directly with the authorities and political bodies of the United States and France. Finally, the World Medical Association is recognized as a 'non-governmental organization' by certain international bodies.

All these facts only go to show that no public health plan can succeed against the will, or even with the ill-will, of the medical profession. Furthermore, it would be dangerous for the authorities to ignore the existence of national associations of members of these professions; the very fact of their existence forces governments to negotiate with them.

However, these contacts at the highest level, though necessary, are insufficient. Contacts must be increased at every level and in connexion with each transaction. Under the most decentralized prophylactic systems and in every health establishment, it is essential to secure, on the largest possible scale, the active assistance of the greatest number of practitioners. Not only must

their opinions be sought, not only must the administration's general policy be explained to them, but it is essential that they be entrusted with real responsibility in executive matters. Let us take an example.

On a short-term basis, certain administrative authorities find it, apparently, simpler and easier to pay one particular doctor to vaccinate throughout a small area, rather than ask all the practitioners in the area to carry out preventive vaccination. From the budgetary standpoint this is perhaps less expensive. But it is highly regrettable as a procedure, for the whole of this sector of preventive medicine thus seems to be orientated against the practitioner, and therefore arouses his hostility; the final result is that compulsory vaccination is not effectively carried through.

The entire relationship between practitioners and the authorities is thus confused, and—what is much more serious—the practitioner ceases to pay any attention to a whole vital sector of medicine, because it is taken away from his habitual field of practice. The danger of over-specializing certain services is beginning, but only just beginning, to be realized. Thus the separate organization of psychiatric services and of the dental profession has had the unfortunate result that nearly all practising doctors have completely lost interest in mental medicine, the psychology of patients, and dental hygiene. In psychiatry, the paradoxical situation almost arose that doctors were only interested in the somatic side of their patients, whilst psychiatry was annexed by psychologists who had no medical training.

Similarly, it is a temptation for public or private organizations to institute their own health establishments, served by salaried doctors and supervised hierarchically, in opposition to independent practitioners who tend the population as a whole. Countries which have been the scene of this division of medicine into two conflicting sectors have been far from pleased with the results, and this can be stated all the more emphatically in that nearly all countries have tried it, though the relative extent of the two sectors has varied considerably from country to country. Experiments of this kind produce, in both sectors, a decline in the quality of medicine.

In addition, national professional organizations of doctors are exposed to the same dangers as those threatening any national civil service; they rapidly acquire a heavy bureaucratic structure. Moreover they often fall into the hands of men who tend to become specialists in administrative relations or standard bearers of demagogic slogans, instead of faithfully representing the views of their constituents. Such organizations are not always representative of the profession from which they spring, even if their leaders have been appointed in a strictly democratic manner. It should be recognized that it is easier for them to respond to emotional reactions and to adopt mass slogans, than to be a centre for reflection and thought, and a training-school for professional men as a whole. Yet it is just for this basic training of the practitioner that these organizations could be most useful. For this to be

possible, however, the practitioner must be integrated into the whole framework of national activities, according to his status and in the sphere that is most familiar to him. If a professional organization is to convey to its members the nature of the relations it maintains with the authorities, each member must, in his daily life, take a share in the medico-social work of his country.

In most nations of the world, doctors—by their social position and cultural standards, and by the services they render—belong to the 'executive' ranks. This gives them a political and administrative influence far greater than that which their numbers would otherwise justify. But it is also a source of temptation for their corporate organizations. If they abuse this rightful power, they risk being submerged by the law of numbers, which is fundamental to democracy; and this would be a catastrophe, not only for the medical profession but for the whole nation. A health service will be more easily constructed, and will function more satisfactorily, if the medical profession has succeeded in vindicating certain of its ideals, which are in the patients' interest, and if each practitioner sees in the part he plays in this service a task which appeals to his vocation and whose success he has very much at heart.

But the doctor too—as an individual, and not merely as a member of a professional group—must do a certain amount of heart-searching. The uneasiness in the medical world, which has been summarily analysed here, calls for serious thought from every practitioner if it is to be remedied.

First, however, it would be useful to clear away certain myths which cling to the history of the medical profession, for it is necessary to distinguish between two problems which are all too often confused, though they are no more than merely connected—the technical independence of the doctor, and the status of the medical profession. The all too frequent confusion of these two problems seems to stem from a rather distorted history of the medical profession itself.

THE STATUS OF THE MEDICAL PROFESSION . . .

The view is currently held in medical circles—and, strange to say, also by opponents of the ideological position taken up in those circles—that the doctor has passed (or is passing, or may pass) from the stage of 'liberal' medicine to the stage of 'socialized' medicine. But this is a very superficial view, which is based simply on a comparison—in a few countries and over a short period—of the status of the doctor today with his status a hundred years ago. Admittedly in France, Great Britain, the United States of America and Germany the doctor, a hundred years ago, exercised his profession largely unhampered by regulations; all that was demanded of him was a

degree. He established himself at his own expense where and how he wished, received any patient who applied to him, and discussed his fees with that patient. Nobody intervened in this purely private relationship. It was usually even protected by the law, which guaranteed professional secrecy—that is, the doctor's duty to disclose nothing of what he had learnt while treating his patients.

Today, the doctor's life is subject to a vastly greater amount of regulation. Even if he can still (as in France) establish himself where he likes, he is no longer free to discuss the amount of his fees in what is now the usual case, that is, where payment is being made not by the patient himself, but by an organization on his behalf. Very often the doctor's status is equivalent to that of a wage-earner or quasi-wage-earner in an organization, and his prescriptions are controlled or limited. The choice of client or doctor is more or less regulated. Certain tasks can be imposed upon doctors. What was previously a private person-to-person relationship has thus become a semi-public service with all its constraints.

This contrast is often illustrated by a conspectus showing, on the one hand, medicine (often adorned with the epithet 'traditional' or 'Hippocratic' as a liberal profession hallmarked by what is known in France as the *charte médicale*[1] (freedom to choose doctor and patient, freedom of prescription, direct agreement upon fees, professional secrecy), and, on the other hand, socialized medicine, where the choice of doctor and patient is directed, limited or regulated, prescriptions are limited or controlled, fees are replaced by a salary or fixed *per capita* payments, and professional secrecy includes, as parties thereto, the social organizations which bear the financial cost of illness. Under this socialized medical system, certain measures of checking diagnosis, of prevention and of treatment may be imposed upon doctor and patient, and the doctor must conform to certain technical instructions.

. . . AND ITS HISTORY

There is undoubtedly much truth in the above description. Reservations must, however, be made on the historical side. The golden age of the liberal medical profession was certainly, in Western countries, the nineteenth century, although it must be admitted that this golden age coincided with a somewhat ineffective period in medical practice, and that the benefits extended by the profession were reserved for a comparatively small fraction of the population —the upper and middle classes—and that only in a small number of countries.

Certain similarities between this period and the Hippocratic period can,

1. L. Portes, *A la recherche d'une éthique médicale*, Paris, 1954.

of course, be recognized. While the Hippocratic school represented, apparently, the first idea of a science of medicine independent of religion, magic and even philosophy (the latter regarded as a body of doctrine from which medicine could be dialectically deduced), and while it was the first attempt to establish an autonomous form of medical science based on observation and systematic experimentation, it also brought a conscious innovation into medical practice: the Hippocratic school regarded the doctor as a free man, a layman caring for his equals, acting only in accordance with his conscience and experience; and it clearly prescribed, for example, the need for professional secrecy.

Yet, a closer look at historical developments shows that Hippocratic medicine was, in the history of antiquity, no more than a brief incident, localized in time and space. Even when in full flower in its own country, it did not completely abolish priestly medicine in the temples, or 'slave medicine'. Slave doctors treated, not only slaves, but important personages of their time. Alongside the Hippocratic system there were, therefore, two other parallel systems of medicine—and even a third, since traces can be found in certain cities of public doctors, who were the forerunners of our socialized medicine.

Furthermore, with the advent of the Roman period, it would seem that most of the doctors were slaves or, at best, freed slaves, being the servants of certain important people or wage-earners working for certain public bodies; perusal of the literature of antiquity suggests that the high Hippocratic ideal had, at that time, been generally lost sight of.

During more than ten centuries of Christianity, medicine was almost entirely of the priestly type, and doctors—apart from a few adventurers—were either monks attached to some charitable body, or servants of great lords. The secularization of medicine dates only from the Renaissance, and in the classical period three types of doctor existed—the social doctor, paid by the community for hospital service; the society doctor, servant of kings and lords; and, finally, a kind of doctor gradually maintained by the emerging *bourgeoisie,* whose status heralded, and served as a basis for, the liberal status of the nineteenth-century practitioner.

This cavalier treatment of history applies, of course, only to the West; but such knowledge as we have of the great historical cycles does not seem materially to increase the real historical importance of a form of medicine that is traditional only in name. In any case, this type of medicine, even when it flourished, never penetrated beyond a limited sector of the population—the free men of the Greek cities and, in the West, the middle classes of the eighteenth and nineteenth centuries.

Did this medicine, then, have a status which really guaranteed doctor and patient all that it should do? The question is the more pertinent in that this status was adapted to a period when, on the technical level, medicine was

very different from medicine today. In any case, it would *a priori* seem unlikely that the appearance of new techniques could leave intact a legal system based on techniques which were outdated.

What in fact is to be defended? In nearly all countries of the world, we find several types of medical profession, and, throughout history, several types of medical status existing side by side—even though the types have been modified. Is it then not illogical to abandon to its 'unhappy fate' all that part of medical practice which falls outside the framework of medicine as a liberal profession, on the pretext of defending at any price a principle?

THE TECHNICAL INDEPENDENCE OF THE DOCTOR

In order to say that it is not illogical, this position of principle would have to be the only effective one, the only one calculated to lead to the provision of real guarantees.

But what, in reality, should be safeguarded above all? The answer is: something special and unique. The relationship between doctor and patient will, whatever happens, remain fundamentally unequal (it is in fact no more extraordinary nor disturbing than the unequal relationship between the pilot of an aircraft and his passengers). In the process whereby a patient, who is really defenceless (even if he thinks he is not), meets his doctor, there can hardly be any effective defence of the rights of the patient's person other than that guaranteed by the technical competence and professional conscience of the doctor in whose hands he has placed himself. The best safeguard surely springs from the fact that, in treating a patient, the doctor knowingly engages his whole responsibility as a person. This responsibility is bound to decrease once the practitioner loses his real technical independence. The consultation between the doctor and the patient, wherever it may take place (in a town consulting-room or in a large hospital), cannot in practice be supervised or controlled.

It has been said of the archaeologist who discovers historic remains that he reads a book of which there is only one copy and whose pages he tears up as he reads them. In fact, when excavation is carried out, all scientific demonstrations are based upon the relationship between the objects found. By disarranging the objects in the course of the excavation, the archaeologist destroys this relationship; his account will have to be trusted, and nothing he has not observed can ever be observed by anyone else.

Similarly, the doctor who examines and treats a patient modifies the patient's state and, by his very intervention, often removes the reasons for which the patient called him in. After his intervention any verdict on the patient's original state, even the verdict of a medical inspector, will depend solely upon the doctor's account.

It can thus be said that real (as opposed to legal) responsibility can only exist in proportion to the practitioner's degree of independence. It would seem, at first sight, that this independence is best protected by the liberal status. Therefore, this status can quite legitimately continue to be regarded as an ideal. But it should not be thought that it provides complete protection for the doctor's technical independence. For example, regulations concerning pharmaceutical products, or a considerable increase in their price which puts them beyond the reach of certain patients, would be enough to compromise freedom in therapeutics, the doctor's freedom of prescription, far more than these freedoms would be compromised by legal elimination. It is enough for the common law courts to lay down certain precise and binding measures, for certain therapeutics to become semi-compulsory; thus, in France, the common law courts have found guilty of manslaughter by negligence, and severely condemned, doctors who have failed to give the wounded preventive injections of anti-tetanus serum; those condemnations make this therapeutic treatment, quite apart from any regulation, just as obligatory as certain legally prescribed injections or vaccinations.

It is certain that the position of the salaried doctor in an organization exposes him to the possible loss of his technical independence. The problem is the same, whether it be a question of a public body, a private organization, or a firm. Very severe measures must clearly be taken, in the patient's interest, to safeguard this technical independence in all non-liberal forms of medical practice.

But it would perhaps be better to defend this independence itself, rather than any particular status, and to endeavour to find, whatever the status of the profession may be, a practical way of safeguarding what, in any circumstances, must be protected first and foremost: the doctor's scientific independence, a reasonable possibility for the patient to choose his doctor (and for the doctor to choose his patient) and, finally, a real guarantee of professional secrecy—a particularly important factor in inspiring the confidence which each party must place in the other.

Clearly, for this to be achieved, several conditions must be fulfilled: financial aid from the authorities, in the interest of freedom of therapeutics; a sufficient number of doctors to make free choice possible; and a legal guarantee to safeguard professional secrecy. All of these can only be ensured through intervention by the authorities.

PSYCHOLOGICAL MEDICINE

At the end of the nineteenth century, when objective methods of exploration were at the height of their success, a revolutionary change of perspective took place. Medicine, in becoming objective, had been gradually slipping towards

veterinary medicine when, suddenly, the development of the psychological sciences resulted in the course being reversed. The seat of the revolution was psychiatry, which during the nineteenth century had made great strides thanks to the anatomo-clinical method. We are, today, familiar with diseases that are apparently purely mental but are due to lesions of the nervous system, to glandular or to metabolic disturbances. Despite important discoveries, however, the anatomo-clinical method had done no more than nibble at the vast range of mental diseases, and certain premature interpretations of nervous affections (as in the case of Charcot's hysteria) had culminated in resounding failure. It was thanks to Freud and the psychoanalytical movement that the contents, and not merely the structure, of mental disorder were reintroduced into the field of psychiatry; that the patient once again began to be listened to; and that, in order to be understood and treated, a large number of psychoses and neuroses were re-integrated into their rightful place in the psycho-social history of each patient. The movement thus initiated by Freud has continued and has gone well beyond the framework of psychoanalytical schools, and even of psychiatry. There is no medical school today that does not loudly proclaim the indissoluble unity of body and mind, the need always to consider the psychological and somatic sides of a disease simultaneously, and the importance of mental factors in determining certain organic manifestations—or at least the need, in diagnosis and therapeutics, to give due weight to the psychological consequences of illness. With this reappearance of the psychological element, the dialogue between doctor and patient once more comes into its own. The value and, indeed, the necessity of psychological contact between the two parties are stressed. This reappearance reinforces scientifically the case advanced by those who have always insisted on the personal, inter-subjective character of any medical action; it gives new life to the old arguments in favour of free choice and complete professional secrecy.

And yet, no science worthy of the name ever really retraces its steps. The introduction of the psychological factor is no justification whatever for abandoning objective techniques as a whole, or even for putting a brake on their constant progress. Moreover, the new inter-subjectivity is not precisely the same as that which, for a period, was lost to sight. It obliges the doctor, not to revert to the status of the *honnête homme* who can talk with his patient, but to become something much more difficult —a technician skilled in a modern psychology that has turned into something at least as complicated as biological chemistry. The most specialized practitioner in strictly organic diseases—the orthopaedic surgeon, for example—cannot ignore the therapeutic importance of the link between himself and the patient; this link, which psychoanalysis calls 'transference', he must use, so as to prevent it from becoming an obstacle; he must also be familiar with all the psychological work he will have to accomplish in order

to re-educate his patient and win the latter's active co-operation in the restoration of his functional activity once his anatomical lesions have healed.

In fact, the doctor must once again listen to his patient and interpret what he says, no longer with the illusory object of making a somatic diagnosis, but rather to discover all he can about the psychological atmosphere of the illness, to assess the mental factors which might have played a part in the appearance of the illness and might yet play a part in its evolution, to understand how the patient regards his own complaint and to probe his psychological reaction to his morbid condition, with the object of using this knowledge in the overall treatment of the patient himself as well as of his disease. The doctor will, at the very least, have to convert himself into an educator of his patient—an arduous task, for the teaching of adults is not yet a very well-defined technique; he will, at the most, have to supplement his prescriptions with psycho-therapeutic treatment and will often, for this purpose, have to resort to the services of a psychiatrist.

THE PATIENT'S TASK

There remains the patient. He is not merely the object of medicine; he is also its subject and its end. As a man, he claims, ever more insistently, his responsibility and autonomy; but such demands, however inevitable, are completely illusory. It is not because the illness is inside him that the patient can know himself better than the doctor can know him from the outside, armed as he is with scientific methods. This demand for autonomy does not in itself confer any skill on the patient; it simply entitles him to refuse, at his own ever more certain risk, the help of one who is no longer a man of medical art, but a man of medical science.

At the same time, the price of health has risen so much that the patient can no longer meet the cost of medical treatment without society's aid, and this in itself restricts his freedom. The choice of doctor, of hospital or of the preventive measures he has to undergo tends to slip from his grasp into the hands of the community which is bearing the cost of his treatment.

Thus the patient comes under a twofold control—for financial and for technical reasons. It has already been noted that this trend is more or less irreversible, but that is all the more reason why it should be kept within certain limits. In this context the return in strength of psychological factors to the field of medicine has as much influence on the status of the patient as it has on the rules of medical practice.

A patient, if he is to recover, should not be treated like a child. Only a free and responsible man can be properly and completely cured, i.e. fully restored to social life. It is therefore vital to try to preserve what can be preserved of the patient's freedom, and educate him to his responsibilities.

The first point need not be stressed again: freedom of choice and professional secrecy are the essentials. The second point requires, perhaps, greater emphasis. It is not certain, for instance, that it is a good thing to relieve the patient of all financial responsibility. The desire to be cured is not sufficiently universal (as psychoanalysts have noted) for certain curbs and financial sanctions to be dispensed with. It is as well that a bearable sacrifice, but a sacrifice all the same, should be imposed on the patient by his treatment, if only to make him realize the considerable sacrifices that society makes on his behalf.

The patient's education must be carried on systematically, if he is to understand what responsibilities are implied by the right to health which he claims. If he wishes this right to be respected, it is, in the first place, for him to ensure that the burden is not too crushing for his fellow citizens as a whole. He must therefore understand the necessity of submitting to a certain amount of discipline, of accepting preventive measures, and of genuinely collaborating in the treatment made available to him. With the growing cost of health charges, it would seem to be more and more out of the question that so large a proportion of the national income should be devoted to sick people who have, by lack of discipline, worsened their own state of health, despite the warnings given to them. When the havoc wrought by certain induced diseases such as alcoholism and drug addiction is taken into account, it can only be concluded that total insurance against the risks of disease and death will not long be practicable unless certain guarantees are secured from patients, as well as some co-operation in the effort made on their behalf.

This conclusion may seem harsh and it may even appear cruel and inhuman to demand further sacrifices of freedom from a man in distress, simply because he *is* in distress. However, it is no more reasonable to let it be thought much longer that the community as a whole should bear, without any return whatsoever, the burden of meeting the health needs of all.

It need hardly be added that patients, as such, do not constitute a social class apart. In fact, everyone is a potential patient, whether he be doctor or administrator. By asking each patient to accept his responsibilities and to face the question of illness and death, we are asking the same of every one of us. And for practical purposes it is first and foremost from healthy people, or from patients who are still curable, that we demand, if only in their own interest, this effort of discipline and co-operation. It is of course to the authorities, to moral and intellectual leaders, and to doctors that falls in the first place this task of health education for every citizen in the modern state.

What is asked is not so extraordinary as might at first sight appear. There came a day when it was recognized that increased motor traffic in large towns required that all citizens (even pedestrians) should, from school age onwards, have a minimum knowledge of the Highway Code, and observe a certain discipline in regard to red lights and pedestrian crossings. Restriction of

freedom, enforced education, absence of real choice (the alternative being to be run over)—the position is exactly the same.

There is a close connexion between the above light-hearted example and the more serious problems considered in this article. With his hands, brain and energy, man has built up a city of progress which continues to grow in complexity. He has given himself the finest gift that it is possible to give; he has achieved, within the space of a single century, what for thousands of years was only a dream for his ancestors; he has doubled, if not trebled, the number of years he will spend on this planet. He could have remained a cave man; he clearly did not wish to. But an empire, be it the empire over life itself, can only be preserved by an effort equal to that expended in conquering it. To enjoy in peace the fruit of his conquests, man must now adapt himself to what he has created. The only difficulty resides perhaps in the fact that, in its long trek towards progress, the human caravan has been led by guides whose intelligence and energy were above the average. If mankind as a whole now wishes to enjoy what they have achieved, it must rise to their level. Nothing great has ever been created without individual efforts and sacrifices. It is to such efforts and sacrifices that medical conquests now summon humanity, in order that humanity may derive real profit from the realization of its dreams.

To keep informed on work in fields outside your own...

read SCIENTIFIC AMERICAN. Each month this magazine presents original, first-hand accounts written by scientists of work going forward in all departments of science. The articles are presented with the collaboration of the editors, in nontechnical language, and are handsomely and informatively illustrated.

"One of the most remarkable ventures in the history of scientific publication."—The New York Times.

In the U.S.A., during the past six years, SCIENTIFIC AMERICAN has gathered a unique audience of more than 125,000 regular readers. They include scientists and engineers in every field, who depend upon its pages to keep informed on fields outside their own.

Readers of *Impact* are invited to subscribe; send your order and payment to the address below.

Subscription rates: one year $8/two years $12/three years $16

2 West 45th Street, New York 36, N.Y.

SCIENTIFIC AMERICAN